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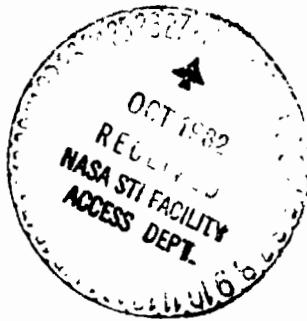
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ATMOSPHERIC ENVIRONMENT FOR SPACE SHUTTLE (STS-4) LAUNCH

By D. L. Johnson, C. K. Hill, and G. W. Batts
Space Science Laboratory

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*George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama*

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15. ABSTRACT This report presents a summary of selected atmospheric conditions observed near Space Shuttle STS-4 launch time on June 27, 1982, at Kennedy Space Center, Florida. Values of ambient pressure, temperature, moisture, ground winds, visual observations (cloud), and winds aloft are included. The sequence of prelaunch Jimosphere measured vertical wind profiles is given in this report. Also presented are the wind and thermodynamic parameters measured at the surface and aloft in the SRB descent/impact ocean area. Final meteorological tapes, which consist of wind and thermodynamic parameters versus altitude, for STS-4 vehicle ascent and SRB descent have been constructed. The STS-4 ascent meteorological data tape has been constructed by Marshall Space Flight Center in response to Shuttle task agreement No. 989-13-22 368 with Johnson Space Center.			
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TECHNICAL MEMORANDUM

ATMOSPHERIC ENVIRONMENT FOR SPACE SHUTTLE (STS-4) LAUNCH

I. INTRODUCTION

This report presents an evaluation of the atmospheric environmental data taken during the launch of the Space Shuttle/STS-4 vehicle. This Space Shuttle vehicle was launched from Pad 39A at Kennedy Space Center (KSC), Florida, on a bearing of 90 degrees east of north at 1500 GMT (1100 EDT) on June 27, 1982.

This report presents a summary of the atmospheric environment at launch time (L+0) of the STS-4, together with the sequence of prelaunch Jimosphere measured winds aloft profiles from L-14 hr through liftoff. The general weather situation for the launch and flight area is described, and surface and upper level wind/thermodynamic observations near launch time are given. Surface and upper level wind/thermodynamic parameter measurements are also presented for the SRB descent/impact analyses.

Previous MSFC-related launch vehicle atmospheric environmental conditions have been published as Appendix A of individual MSFC Saturn Flight Evaluation Working Group reports [1]. Office memorandums have been issued for previous flights giving launch pad wind information. A report has also been published [2] which summarizes most launch atmospheric conditions observed for the past 155 MSFC/ABMA-related vehicle launches through SA-208 (Skylab 4). Reports summarizing ASTP, STS-1, STS-2, and STS-3 launch conditions are presented in References 3, 4, 5, and 6, respectively.

II. SOURCES OF DATA

Atmospheric observational data used in this report were taken from weather maps made by the National Weather Service, plus all available surface observations and measurements from around the launch area. Upper air observations were taken from balloon-released instruments sent aloft from Cape Canaveral Air Force Station (CCAFS) and from the ship Gen. H. S. Vandenberg in the Atlantic Ocean off the Florida Coast. High-altitude winds and thermodynamic data were measured by the Loki and Super-Loki rocketsondes launched from the CCAFS. Table 1 presents a listing of systems used to obtain the upper level wind profiles used in compiling the final ascent meteorological data tape. Only the ship-launched Omegasonde-Rawinsonde and Loki/Super-Loki rocket data were used in the upper level atmospheric regions for the construction of the final SRB descent/impact meteorological data tape. Data cutoff altitudes are also given in Table 1.

III. GENERAL SYNOPTIC SITUATION AT LAUNCH TIME

An area of high pressure located in the Atlantic ocean off the southeastern United States coast, extended its influence over the Florida peninsula during the morning of launch. Surface winds in the KSC launch area were light (5 to 6 ft/sec) and from the southeast. Very little cloud cover, warm temperatures (low 70s °F), and humid conditions prevailed throughout the early morning countdown period. Figure 1 gives the surface weather map 3 hr prior to launch. Figure 2 presents the wind flow aloft at the 500 mb level. Light westerly winds dominated the flow aloft over the Florida KSC area.

Cloudiness was not very prevalent over the Florida peninsula or the KSC launch complex as shown in Figure 3. Figure 3 presents the GOES east (SMS II) visible satellite picture taken 30 min after launch (1530 GMT). Scattered cumulus clouds at 1200 ft were present during launch. Figure 4 shows the contrail of the Shuttle at launch as recorded by the GOES east satellites visible photograph taken at 1503 GMT.

IV. SURFACE OBSERVATIONS AT LAUNCH TIME

Surface observations at launch time for selected KSC locations are given in Table 2. Included are pad 39A, Shuttle runway, and CCAFS balloon release station observations. Neither precipitation nor lightning was observed at launch time.

Table 3 presents Pad 39A wind data along with other standard hourly meteorological measurements and sky observations for the 6-hr period prior to launch of STS-4. Values for wind speed and direction are given for the 84 m (275 ft) FSS reference level and 18 m (60 ft) pad light pole level.

V. UPPER AIR MEASUREMENTS DURING LAUNCH

The FPS 16 Jimosphere (1515 GMT), MSS rawinsonde (1510 GMT), Loki-Dart rocketsonde (1730 GMT), and Super-Loki rocketsonde (1630 GMT) systems were used to measure the upper level wind and thermodynamic parameters for STS-4 launch. At altitudes above the rocket-measured data, the Global Reference Atmosphere (GRA) [7] parameters for June KSC conditions were used. A tabulation of the STS-4 final meteorological data for ascent is presented in Table 4 which lists the wind and thermodynamic parameters versus altitude. A brief summary of parameters is given in the following paragraphs.

A. Wind Speed

At launch time, wind speeds were 5.8 ft/sec (3.4 kn) at 60 ft and increased to a maximum of 37 ft/sec (22 kn) blowing from 329 degrees. This maximum occurred at an altitude of 47,900 ft (14,600 m). The winds decreased above this level and then became stronger again at much higher levels, as shown in Figure 5. The overall maximum measured speed was 241 ft/sec (143 kn) at 216,000 ft (65,837 m) altitude.

B. Wind Direction

At launch time, the 60-ft wind direction was from the southeast (133 degrees) and shifted through the south to a westerly component above 5500 ft (1676 m). The winds then shifted into the summer-easterly regime between 57,000 ft (17,374 m) and 235,000 ft (71,628 m). Figure 5 shows the complete wind direction versus altitude profile. As shown in Figure 5, wind directions became quite variable at altitudes with low wind speeds.

C. Prelaunch/Launch Wind Profiles

Prelaunch/launch wind profiles presented in Figures 6 through 9 were measured by the Jimosphere FPS-16 system. Data are shown for five measurement periods beginning at L-14 hr and extending through L+0.

The wind speed profiles for the 14-hr period prior to and including L+0 are shown in Figure 6. These values were near the June mean profile at altitude levels above 30,000 ft but were somewhat greater than the mean wind speeds below this altitude. As an illustration of the departure from normal the L+0 measured wind speed at 20,000-ft altitude was 28 ft/sec compared to the June mean at this altitude of 10 ft/sec.

The wind directions are presented in Figure 7 for this same 14-hr prelaunch/launch period. These profiles did not differ greatly from the June mean values, especially at altitude levels below about 30,000 ft. However, above 30,000 ft, the measured wind direction did not closely coincide with the mean. For example, at 36,000-ft altitude the mean June wind direction was about 280 degrees while the L+0 value was measured as being 013 degrees or a departure of about 93 degrees from the June mean.

The in-plane and out-of-plane wind speed profile values are shown in Figures 8 and 9, respectively. Although some variation about the June mean occurred especially with respect to the in-plane wind speeds, the L+0 values were close to the June mean values.

D. Thermodynamic Data

The thermodynamic data taken at STS-4 launch time, consisting of atmospheric temperature, dew-point temperature, pressure, and density have been compiled as the STS-4 ascent meteorological data and are presented in Table 4. The associated thermodynamic data taken in support of the SRB descent have also been assembled as the STS-4 SRB descent/impact meteorological data and are presented in Table 5. The vertical structure of temperature for the STS-4 ascent and for the SRB descent is shown graphically versus altitude in Figure 10.

The atmospheric thermodynamic parameters of temperature, pressure, and density, measured during STS-4 launch below 140,000 ft, were generally close to their respective PRA-63 [8] annual values. Temperature deviated only a maximum of +2.6 percent from the PRA-63 at 95,000 ft (28,956 m). Pressure deviated a maximum of +6.4 percent from the PRA-63 at 94,000 ft (28,651 m), while density deviated +7.5 percent at 110,000 ft (33,528 m).

E. SRB Upper Air and Surface Measurements

As has been mentioned in earlier paragraphs, an SRB descent meteorological data tape has also been constructed which consists of data taken from the Omega-sonde-Rawinsonde system (1539 GMT) aboard the USNS Vandenberg, which was stationed off the coast in the Atlantic Ocean. The CCAFS measured Loki/Super-Loki rocketsonde data and the GRA model data were used at altitude levels above the measured Omegasonde data. The tabular values for the SRB descent meteorological tape are presented in Table 5, with wind speed and direction profiles presented in Figure 11. Figure 10 gives the vertical temperature profile.

The surface-ship meteorological and oceanographical observations taken close to STS-4 SRB impact are presented in Table 6.

VI. ATMOSPHERIC SUMMARY CONDITIONS FOR STS LAUNCHES

Given in Table 7 are selected atmospheric L+0 launch conditions for all the Space Shuttle launches.

TABLE 1. SYSTEMS USED TO MEASURE UPPER AIR WIND DATA FOR STS-4 ASCENT*

Type of Data	Date: June 27, 1982		Portion of Data Used			
	Release Time		Start		End	
	Time (GMT) (hr:min)	Time After T+0 (min)	Altitude m (ft)	Time After T+0 (min)	Altitude m (ft)	Time After T+0 (min)
EPS 16 Jimsphere	15:15	15	6 (21)	15	16,764 (55,000)	73
Rawinsonde	15:40	10	17,069 (56,000)	66	28,956 (95,000)	105
Loki Dart Rocketsonde	17:30	150	68,580 (225,000)	150	29,261 (96,000)	170
Super Loki Rocketsonde (Robin)	16:30	90	82,296 (270,000)	90	68,885 (226,000)	91
Omegasonde Rawinsonde*	15:39	39	18 (60)	39	28,346 (93,000)	132

*The Omegasonde Rawinsonde was released from the USNS Gen. H. S. Vandenberg to measure the upper atmosphere for SRB descent/impact analyses.

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TABLE 2. SURFACE OBSERVATIONS AT STS-4 LAUNCH TIME

Location ^a	Time After L+0 (min)	Pressure (MSL) N/cm ² (psia)	Temperature °K (°F)	Dew Point °K (°F)	Relative Humidity (%)	Visibility km (miles)	Sky Cover		Wind		
							Cloud *** Amount (Tenths)	Cloud Type	Height of Base Meters (ft)	Speed f/sec (kt)	Direction (deg)
NASA Space Shuttle Runway Winds Measured at 10.4 m (34 ft)	0	10.207 (14.804)	299.6 (85.0)	297.0 (75.0)	72	16 (10)	2	Cumulus	366 (1,200)	8.4 (5.0)	260
CCAFS ^c Surface Measurements	10	10.210 (14.808)	302.0 (84.0)	297.9 (76.0)	78	—	—	—	—	—	160
Pad 39A lightpole ^d SE 18.3 m (60.0 ft)	0	10.200 ** (14.794)	302.3 (84.4)	296.3 (73.6)	70	—	—	—	—	—	5.8 ^b (3.4)
Pad 39A FSS (Top-SE) 83.8 m (275 ft)	0	—	—	—	—	—	—	—	—	—	4.9 ^b (2.9)

* Pressure value at 13 ft above MSL.

** Pad 39A Camera Site 3 barometric pressure instrument appeared to be reading too low. Therefore, the KSC Shuttle runway station pressure value interpolated to 10.200 N/cm² at 21 ft above MSL would be more appropriate as the L+0 pad atmospheric pressure measurement.

*** Two-tenths total sky cover.

a. Altitudes of measurements are above natural grade, except where noted.

b. Approximately 30 sec average prior to L+0.

c. Balloon release site.

d. Pad 39A thermodynamic measurements are taken at camera site No. 3, approximately 6.4 m (21 ft) above MSL.

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TABLE 3. STS-4 PRE-LAUNCH THROUGH LAUNCH KSC PAD 39A
METEOROLOGICAL MEASUREMENTS*

27 June 1982 Time GMT	Hourly Atmospheric Measurements						Sky Condition				
	Temp. (°F)	Dew Pt. (°F)	RH (%)	275' Level (SE) **	60' Level (SE) **	WS Kt	WD°	WS Kt	WD°	Total Sky Cover	Vis. (mi.)
0900	75	72	90	6	090	6	090	Clear Skys	0/10	10	Patches ground fog
1000	78	75	91	7	130	3	090	Clear Skys	0/10	10	Patches ground fog
1100	76	73	91	5	100	3	100	1/10 AC at 16,000 ft	1/10	10	Patches ground fog dissipating
1200	78	75	91	7	110	4	110	Clear Skys	0/10	10	
1300	80	74	83	9	150	5	170	Clear Skys	0/10	10	
1400	82	74	78	10	0	6	170	1/10 CU at 1,100 ft	1/10	10	
L+0*** 1500	84	74	70	3	141	3	133	2/10 CU at 1,200 ft	2/10	10	

* Hourly observations obtained verbally from CCAFS.

** 10 min mean about the hour from pad 39A instrumentation.

*** L+0 PAD Wind and thermodynamic parameters obtained from HOSC strip charts. SE Anemometers used at 60 and 275 ft levels for L+0 wind conditions (approximately 30 sec average prior to L+0). PAD 39A L+0 atmospheric pressure, at 21 ft (MSL), was 10.200 N/cm². Sea level pressure was 10.207 N/cm².

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TABLE 4. STS-4 FINAL T+0 ASCENT METEOROLOGICAL DATA TAPE

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M ³)	W. S. POINT (DEG C)
00021	010	150	26.9	1020+04	1164+04	22.6
00100	009	154	28.7	1017+04	1162+04	22.7
00200	009	159	28.4	1014+04	1159+04	22.6
00300	009	163	28.2	1011+04	1156+04	22.5
00400	009	168	27.9	1007+04	1153+04	22.5
00500	009	173	27.7	1004+04	1151+04	22.4
00600	008	178	27.4	1000+04	1148+04	22.3
00700	009	183	27.2	9971+03	1145+04	22.2
00800	009	187	26.9	9938+03	1142+04	22.1
00900	010	192	26.7	9905+03	1139+04	22.0
01000	010	196	26.4	9872+03	1137+04	21.9
01100	010	200	26.2	9838+03	1134+04	21.7
01200	011	204	26.0	9804+03	1131+04	21.4
01300	011	207	25.8	9771+03	1128+04	21.2
01400	011	211	25.6	9737+03	1125+04	20.9
01500	012	214	25.4	9703+03	1122+04	20.7
01600	012	216	25.1	9670+03	1119+04	20.5
01700	013	219	24.9	9637+03	1116+04	20.2
01800	013	215	24.7	9604+03	1113+04	20.0
01900	014	206	24.5	9571+03	1110+04	19.7
02000	011	205	24.3	9538+03	1107+04	19.5
02100	012	225	24.1	9504+03	1104+04	19.2
02200	011	215	23.9	9472+03	1101+04	18.9
02300	010	211	23.6	9439+03	1098+04	18.7
02400	006	210	23.4	9406+03	1095+04	18.4
02500	009	207	23.2	9373+03	1093+04	18.1
02600	012	208	23.0	9341+03	1090+04	17.8
02700	010	200	22.8	9308+03	1087+04	17.5
02800	006	214	22.5	9276+03	1084+04	17.3
02900	006	231	22.3	9244+03	1081+04	17.0
03000	010	223	22.1	9212+03	1078+04	16.7
03100	006	202	21.9	9179+03	1075+04	16.6
03200	005	213	21.7	9147+03	1072+04	16.4
03300	007	242	21.5	9115+03	1069+04	16.3
03400	008	235	21.3	9084+03	1066+04	16.2
03500	006	228	21.1	9052+03	1063+04	16.0
03600	004	228	20.9	9020+03	1061+04	15.9
03700	005	243	20.7	8989+03	1058+04	15.8
03800	009	245	20.5	8957+03	1055+04	15.7
03900	010	236	20.3	8926+03	1052+04	15.5
04000	008	227	20.1	8895+03	1049+04	15.4
04100	009	240	19.9	8863+03	1046+04	15.2
04200	012	245	19.7	8832+03	1043+04	14.9
04300	012	241	19.4	8801+03	1040+04	14.7
04400	009	258	19.2	8770+03	1038+04	14.6
04500	009	247	19.0	8739+03	1035+04	14.2
04600	009	247	18.8	8708+03	1032+04	14.0
04700	009	228	18.6	8677+03	1029+04	13.7
04800	007	227	18.3	8647+03	1026+04	13.5
04900	008	246	18.1	8616+03	1024+04	13.2

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TABLE 4. (Continued)

ARTICLE (#)	END SPEED (ft/sec)	END DISPLACEMENT (deg)	TEMPERATURE (deg C)	PRESSURE (millibars)	DENSITY (g/cm ³)	DEG POINT
J05100	J05	243	17.9	15506+0.3	1.021+0.4	11.0
J05200	J06	242	17.7	15556+0.3	1.018+0.4	12.7
J05300	J06	258	17.6	15625+0.3	1.015+0.4	12.9
J05400	J07	257	17.4	15695+0.3	1.012+0.4	12.7
J05500	J07	257	17.3	15765+0.3	1.009+0.4	12.7
J05600	J07	279	17.1	15835+0.3	1.006+0.4	11.4
J05700	J07	281	16.9	15845+0.3	1.003+0.4	11.4
J05800	J07	252	16.8	15945+0.3	1.001+0.4	11.4
J05900	J07	274	16.6	15975+0.3	1.000+0.4	11.1
J06000	J06	266	16.5	16045+0.3	1.000+0.4	10.6
J06100	J06	254	16.3	16116+0.3	1.000+0.3	10.4
J06200	J06	273	16.1	16286+0.3	1.000+0.3	10.1
J06300	J06	257	15.9	16356+0.3	1.000+0.3	9.5
J06400	J06	270	15.6	16422+0.3	1.000+0.3	9.2
J06500	J04	260	15.4	16498+0.3	1.000+0.3	8.8
J06600	J04	257	15.2	16566+0.3	1.000+0.3	8.5
J06700	J04	277	15.0	16639+0.3	1.000+0.3	8.2
J06800	J04	271	14.8	16710+0.2	1.000+0.3	7.9
J06900	J04	265	14.5	16801+0.2	1.000+0.3	7.6
J07000	J04	269	14.3	16902+0.3	1.000+0.3	7.2
J07100	J07	295	14.1	17023+0.3	1.000+0.3	6.9
J07200	J06	267	13.9	17194+0.3	1.000+0.3	6.6
J07300	J06	257	13.7	172937+0.3	1.000+0.3	6.4
J07400	J05	241	13.5	17308+0.3	1.000+0.3	6.2
J07500	J03	270	13.3	17379+0.3	1.000+0.3	5.9
J07600	J04	300	13.1	17451+0.3	1.000+0.3	5.7
J07700	J06	262	12.8	17623+0.3	1.000+0.3	5.5
J07800	J07	253	12.6	17794+0.3	1.000+0.3	5.3
J07900	J05	237	12.4	17766+0.3	1.000+0.3	5.1
J08000	J04	269	12.2	17738+0.3	1.000+0.3	4.8
J08100	J05	283	12.0	17710+0.3	1.000+0.3	4.6
J08200	J09	265	11.8	17682+0.3	1.000+0.3	4.4
J08300	J07	243	11.6	17659+0.3	1.000+0.3	4.2
J08400	J06	234	11.5	17627+0.3	1.000+0.3	4.0
J08500	J06	244	11.3	17599+0.3	1.000+0.3	3.8
J08600	J08	225	11.1	17571+0.3	1.000+0.3	3.6
J08700	J08	234	10.9	17549+0.3	1.000+0.3	3.5
J08800	J08	263	10.7	17517+0.3	1.000+0.3	3.3
J08900	J11	257	10.6	17489+0.3	1.000+0.3	3.1
J09000	J12	234	10.4	17462+0.3	1.000+0.3	2.9
J09100	J09	243	10.2	17435+0.3	1.000+0.3	2.7
J09200	J09	250	10.0	17408+0.3	1.000+0.3	2.5
J09300	J09	260	9.8	17381+0.3	1.000+0.3	2.4
J09400	J11	255	9.7	17354+0.3	1.000+0.3	2.2
J09500	J12	234	9.5	17327+0.3	1.000+0.3	2.1
J09600	J09	243	9.3	17300+0.3	1.000+0.3	1.9
J09700	J14	254	9.1	17278+0.3	1.000+0.3	1.7
J09800	J16	235	8.9	17247+0.3	1.000+0.3	1.6
J09900	J11	244	8.8	17221+0.3	1.000+0.3	1.5
J10000	J11	255	8.6	17194+0.3	1.000+0.3	1.3

TABLE 4. (Continued)

ALTITUDE (FT)	SPECIES (FT/SEC)	INC SIGHT (DEG)	TEMPERATURE (DEG C) a. ₄	PRESSURE (MILLIBARS) b.	DENSITY (GPM/ft ³) c.	DENSITY (DEG C) d.
					2.0	2.5
313252						
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TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)		DEW POINT (DEG C)
					1066	1065	
215000	023	270	.1	.5946+03	.7569+03	.7545+03	-9.6
216100	026	262	-1	.5925+03	.7545+03	.7545+03	-10.0
215200	024	257	-2	.5903+03	.7521+03	.7521+03	-10.3
215300	029	254	-4	.5880+03	.7498+03	.7498+03	-10.7
214600	026	254	-6	.5858+03	.7474+03	.7474+03	-11.1
215500	026	254	-7	.5636+03	.7451+03	.7451+03	-11.4
215600	026	251	-9	.5614+03	.7428+03	.7428+03	-11.8
215700	025	257	-11	.6792+03	.7406+03	.7406+03	-12.2
213800	026	264	-13	.5770+03	.7381+03	.7381+03	-12.6
215900	026	260	-14	.5746+03	.7356+03	.7356+03	-12.9
214000	027	254	-16	.5726+03	.7335+03	.7335+03	-13.3
214100	024	263	-18	.5704+03	.7312+03	.7312+03	-13.5
214200	026	264	-20	.5682+03	.7290+03	.7290+03	-13.6
214300	025	257	-22	.5661+03	.7268+03	.7268+03	-13.6
214400	029	254	-24	.5639+03	.7245+03	.7245+03	-14.0
214500	026	256	-26	.5617+03	.7223+03	.7223+03	-14.1
214600	027	257	-26	.5596+03	.7201+03	.7201+03	-14.3
214700	026	253	-30	.5574+03	.7179+03	.7179+03	-14.5
214800	026	264	-32	.5553+03	.7155+03	.7155+03	-14.7
214900	026	265	-34	.5532+03	.7135+03	.7135+03	-14.8
215000	026	261	-36	.5511+03	.7113+03	.7113+03	-15.0
215100	026	263	-38	.5490+03	.7091+03	.7091+03	-15.3
215200	025	274	-40	.5468+03	.7070+03	.7070+03	-15.6
215300	026	269	-43	.5447+03	.7049+03	.7049+03	-16.0
215400	023	263	-45	.5426+03	.7026+03	.7026+03	-16.3
215500	026	271	-47	.5405+03	.7006+03	.7006+03	-16.6
215600	022	271	-49	.5385+03	.6985+03	.6985+03	-16.9
215700	020	256	-51	.5364+03	.6964+03	.6964+03	-17.2
215800	024	251	-54	.5343+03	.6943+03	.6943+03	-17.6
215900	021	254	-56	.5323+03	.6922+03	.6922+03	-17.9
216000	025	256	-58	.5302+03	.6902+03	.6902+03	-18.2
216100	027	245	-60	.5282+03	.6880+03	.6880+03	-18.5
216200	023	249	-62	.5261+03	.6858+03	.6858+03	-18.9
216300	027	248	-63	.5241+03	.6836+03	.6836+03	-19.2
216400	022	244	-64	.5220+03	.6814+03	.6814+03	-19.5
216500	029	239	-65	.5200+03	.6792+03	.6792+03	-19.8
216600	026	236	-67	.5180+03	.6771+03	.6771+03	-20.2
216700	029	247	-71	.5160+03	.6749+03	.6749+03	-20.5
216800	027	240	-72	.5140+03	.6728+03	.6728+03	-20.8
216900	022	244	-74	.5120+03	.6708+03	.6708+03	-21.2
217000	032	251	-76	.5100+03	.6685+03	.6685+03	-21.5
217100	033	247	-77	.5080+03	.6666+03	.6666+03	-22.3
217200	031	253	-77	.5060+03	.6647+03	.6647+03	-23.2
217300	032	256	-78	.5040+03	.6633+03	.6633+03	-24.0
217400	029	250	-79	.5021+03	.6613+03	.6613+03	-24.8
217500	032	256	-79	.5001+03	.6596+03	.6596+03	-25.6
217600	028	252	-80	.4982+03	.6582+03	.6582+03	-26.5
217700	033	259	-81	.4962+03	.6569+03	.6569+03	-27.3
217800	026	259	-82	.4943+03	.6557+03	.6557+03	-28.1
217900	030	258	-82	.4924+03	.6545+03	.6545+03	-29.0

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TABLE 4. (Continued)

ALTITUDE (FT.)	WIND SPEED (FT/SEC.)	WIND DIRECTION (DEG.)	TEMPERATURE (DEG. C.)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C.)
32,000	026	254	-8.3	.6908+03	.6498+03	-29.8
32,100	029	255	-8.5	.6905+03	.6497+03	-30.1
32,200	033	247	-8.6	.6906+03	.6498+03	-30.4
32,300	023	250	-8.6	.6907+03	.6495+03	-30.6
32,400	032	256	-9.0	.6908+03	.6496+03	-30.9
32,500	025	252	-9.1	.6909+03	.6494+03	-31.2
32,600	029	254	-9.3	.6910+03	.6492+03	-31.5
32,700	034	256	-9.5	.6911+03	.6492+03	-31.8
32,800	034	253	-9.7	.6913+03	.6482+03	-32.0
32,900	029	253	-9.6	.6913+03	.6481+03	-32.3
32,000	031	254	-10.0	.6915+03	.6471+03	-32.6
32,100	028	255	-10.2	.6917+03	.6421+03	-32.6
32,200	029	252	-10.4	.6918+03	.6402+03	-31.3
32,300	031	250	-10.7	.6919+03	.6382+03	-30.7
32,400	026	243	-10.9	.6921+03	.6363+03	-30.0
32,500	027	244	-11.1	.6923+03	.6343+03	-29.3
32,600	026	250	-11.3	.6925+03	.6324+03	-28.7
32,700	024	264	-11.5	.6927+03	.6305+03	-28.1
32,800	023	251	-11.6	.6929+03	.6286+03	-27.4
32,900	021	255	-12.0	.6931+03	.6266+03	-26.7
32,000	025	251	-12.2	.6933+03	.6247+03	-26.1
32,100	020	249	-12.4	.6935+03	.6228+03	-26.2
32,200	021	260	-12.6	.6937+03	.6209+03	-26.3
32,300	020	251	-12.8	.6939+03	.5990+03	-26.5
32,400	022	253	-13.0	.6941+03	.5971+03	-26.6
32,500	021	254	-13.2	.6943+03	.5952+03	-26.7
32,600	021	254	-13.5	.6945+03	.5933+03	-26.8
32,700	022	265	-13.7	.6946+03	.5914+03	-26.9
32,800	021	262	-13.9	.6948+03	.5996+03	-27.1
32,900	022	257	-14.1	.6950+03	.5877+03	-27.2
32,000	023	256	-14.3	.6952+03	.5858+03	-27.3
32,100	024	261	-14.5	.6954+03	.5847+03	-27.4
32,200	022	255	-14.7	.6956+03	.5828+03	-27.5
32,300	025	254	-14.9	.6958+03	.5809+03	-27.5
32,400	022	259	-15.1	.6960+03	.5790+03	-27.6
32,500	022	258	-15.3	.6962+03	.5765+03	-27.7
32,600	024	259	-15.6	.6964+03	.5747+03	-27.8
32,700	019	265	-15.6	.6965+03	.5729+03	-27.9
32,800	024	266	-16.0	.6966+03	.5721+03	-27.9
32,900	023	263	-16.2	.6967+03	.5710+03	-27.0
32,000	026	262	-16.4	.6968+03	.5692+03	-26.0
32,100	019	259	-16.6	.6969+03	.5674+03	-26.1
32,200	016	262	-16.7	.6970+03	.5654+03	-27.7
32,300	017	261	-16.9	.6971+03	.5635+03	-27.8
32,400	019	256	-17.0	.6972+03	.5617+03	-26.2
32,500	019	265	-17.2	.6973+03	.5597+03	-26.3
32,600	016	262	-17.4	.6974+03	.5578+03	-27.4
32,700	019	251	-17.5	.6975+03	.5560+03	-27.5
32,800	019	257	-17.7	.6976+03	.5551+03	-25.2
32,900	016	253	-17.8	.6977+03	.5534+03	-24.9

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TABLE 4. (Continued)

STATION	IND. SPEED (FT/SEC.)	IND. DIRECTION (DEG.)	TEMPERATURE (DEG. C.)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M ³)	DEW POINT (DEG. C.)
U2230LJ	C19	230	-18.0	4018+03	5481+03	-24.5
U2251CJ	C14	234	-18.2	4002+03	5463+03	-25.1
U2252CJ	C17	231	-18.4	3985+03	5446+03	-25.7
U2253CJ	C14	231	-18.6	3969+03	5428+03	-26.2
U2254CJ	C13	236	-18.8	3953+03	5410+03	-26.8
U2255LJ	C15	234	-16.9	3937+03	5392+03	-27.4
U2256CJ	C14	226	-19.1	3921+03	5374+03	-28.0
U2257UJ	C14	244	-19.3	3905+03	5357+03	-28.6
U2258UJ	C15	246	-19.5	3889+03	5339+03	-29.1
U2259CJ	C16	247	-19.7	3873+03	5321+03	-29.7
U2260CJ	C16	272	-19.9	3857+03	5304+03	-30.3
U2261CJ	C17	266	-20.2	3842+03	5288+03	-30.2
U2262CJ	C14	264	-20.4	3826+03	5272+03	-30.1
U2263CJ	C16	259	-20.7	3810+03	5255+03	-29.9
U2264LJ	C11	269	-21.0	3795+03	5239+03	-29.8
U2265UJ	C13	256	-21.2	3779+03	5224+03	-29.7
U2266CJ	C15	252	-21.5	3763+03	5208+03	-29.6
U2267LJ	C11	252	-21.8	3748+03	5192+03	-29.5
U2268CJ	C12	252	-22.1	3733+03	5176+03	-29.3
U2269CJ	C13	241	-22.3	3717+03	5160+03	-29.2
U2270CJ	C12	245	-22.6	3702+03	5145+03	-29.1
U2271CJ	C12	249	-22.8	3687+03	5128+03	-29.5
U2272CJ	C11	257	-23.0	3671+03	5111+03	-29.8
U2273CJ	C11	264	-23.2	3656+03	5094+03	-30.2
U2274CJ	C12	274	-23.4	3641+03	5077+03	-30.5
U2275CJ	C12	265	-23.6	3626+03	5060+03	-30.9
U2276CJ	C11	261	-23.9	3611+03	5044+03	-31.3
U2277CJ	C16	267	-24.1	3596+03	5027+03	-31.6
U2278CJ	C13	257	-24.3	3581+03	5011+03	-32.0
U2279CJ	C15	271	-24.5	3566+03	4994+03	-32.3
U2280CJ	C15	260	-24.7	3552+03	4978+03	-32.7
U2281CJ	C14	272	-24.9	3537+03	4961+03	-33.0
U2282CJ	C16	271	-25.1	3522+03	4945+03	-33.3
U2283CJ	C16	266	-25.3	3507+03	4928+03	-33.5
U2284CJ	C11	268	-25.5	3492+03	4912+03	-33.8
U2285CJ	C17	269	-25.7	3478+03	4895+03	-34.1
U2286CJ	C14	266	-26.0	3463+03	4879+03	-34.4
U2287CJ	C16	267	-26.2	3449+03	4863+03	-34.7
U2288CJ	C11	277	-26.4	3434+03	4847+03	-34.9
U2289CJ	C16	259	-26.6	3420+03	4831+03	-35.2
U2290LJ	C13	266	-26.8	3335+03	4736+03	-36.7
U2291CJ	CC9	274	-27.0	3321+03	4721+03	-37.0
U2292CJ	C10	271	-27.3	3317+03	4705+03	-37.2
U2293UJ	C13	273	-27.5	3303+03	4687+03	-36.5
U2294UJ	CC7	266	-27.7	3299+03	4752+03	-36.5
U2295CJ	CC6	297	-27.9	3283+03	4731+03	-35.2
U2296CJ	CC1	280	-28.2	3271+03	4721+03	-35.5
U2297CJ	CC7	292	-28.4	3267+03	4705+03	-37.5
U2298CJ	CC8	290	-28.6	3253+03	4690+03	-37.5
U2299CJ	CC9	290	-28.9	3249+03	4675+03	-37.7

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TABLE 4. (Continued)

ALTITUDE (FT)	IND. SPEED (FT/SEC)	IND. DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/P3)	DEW POINT (DEG C)
335555	210	203	-29.1	.3265*03	.4659*03	-36.0
335100	210	208	-29.3	.3251*03	.4644*03	-36.0
335200	210	204	-29.6	.3237*03	.4629*03	-38.4
335300	210	205	-29.6	.3223*03	.4614*03	-38.9
335400	211	200	-30.1	.3210*03	.4599*03	-39.3
335500	211	205	-30.3	.3196*03	.4584*03	-39.6
335600	211	201	-30.3	.3182*03	.4569*03	-40.2
335700	211	206	-30.6	.3169*03	.4554*03	-40.7
335800	211	208	-31.0	.3155*03	.4539*03	-41.1
335900	211	206	-31.3	.3142*03	.4524*03	-41.6
334000	210	251	-31.5	.3129*03	.4509*03	-42.0
334100	210	248	-31.8	.3115*03	.4495*03	-42.5
334200	210	243	-32.0	.3102*03	.4480*03	-42.8
334300	206	215	-32.3	.3088*03	.4466*03	-43.0
334400	209	243	-32.5	.3075*03	.4452*03	-43.3
334500	209	246	-32.8	.3062*03	.4437*03	-43.5
334600	207	241	-33.1	.3049*03	.4423*03	-43.6
334700	207	238	-33.3	.3036*03	.4409*03	-44.1
334800	207	239	-33.6	.3023*03	.4395*03	-44.3
334900	206	226	-33.6	.3010*03	.4381*03	-44.6
335000	206	217	-34.1	.2997*03	.4367*03	-44.8
332100	203	197	-34.3	.2984*03	.4352*03	-45.1
332200	203	222	-34.6	.2971*03	.4337*03	-45.4
332300	204	257	-34.6	.2958*03	.4322*03	-45.7
332400	206	256	-35.0	.2945*03	.4308*03	-46.1
334500	205	265	-35.2	.2932*03	.4295*03	-46.4
332600	204	261	-35.5	.2919*03	.4282*03	-46.7
332700	203	272	-35.7	.2907*03	.4279*03	-47.0
332800	206	246	-35.9	.2894*03	.4264*03	-47.3
332900	204	270	-36.2	.2882*03	.4250*03	-47.7
333000	202	241	-36.4	.2869*03	.4235*03	-48.0
333100	202	295	-36.7	.2856*03	.4221*03	-48.3
333200	204	265	-37.0	.2844*03	.4195*03	-48.5
333300	202	259	-37.3	.2831*03	.4161*03	-48.7
333400	203	219	-37.6	.2819*03	.4167*03	-49.0
333500	205	277	-37.6	.2807*03	.4155*03	-49.2
333600	204	267	-38.1	.2794*03	.4142*03	-49.4
333700	205	297	-38.4	.2782*03	.4129*03	-49.6
333800	203	297	-38.7	.2770*03	.4116*03	-50.1
333900	201	298	-39.0	.2756*03	.4103*03	-50.3
334000	207	316	-39.3	.2746*03	.4090*03	-50.5
334100	207	345	-39.5	.2733*03	.4076*03	-50.7
334200	192	323	-39.8	.2721*03	.4062*03	-51.0
334300	211	324	-40.0	.2709*03	.4048*03	-51.1
334400	212	328	-40.3	.2697*03	.4035*03	-51.3
334500	213	329	-40.5	.2685*03	.4021*03	-51.4
334600	213	330	-40.6	.2673*03	.4008*03	-51.6
334700	212	345	-41.0	.2661*03	.3994*03	-51.8
334800	212	348	-41.3	.2649*03	.3981*03	-52.0
334900	211	344	-41.5	.2638*03	.3967*03	-52.2

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
335100	010	Q1C	356	.2626+03	.3954+03	-52.4
335100	C11	356	-42.0	.2614+03	.3940+03	-52.6
335200	C11	011	-42.0	.2602+03	.3926+03	-52.8
335300	008	355	-42.5	.2591+03	.3912+03	-53.0
335400	C09	012	-42.7	.2579+03	.3898+03	-53.2
335500	C10	012	-42.9	.2566+03	.3884+03	-53.4
335600	C08	015	-43.1	.2556+03	.3871+03	-53.7
335700	011	016	-43.2	.2545+03	.3857+03	-53.9
335800	C11	025	-43.6	.2533+03	.3843+03	-54.1
335900	C11	010	-43.8	.2522+03	.3830+03	-54.3
336000	C11	013	-44.0	.2510+03	.3816+03	-54.5
336100	011	020	-44.2	.2499+03	.3803+03	-54.7
336200	C16	357	-44.5	.2488+03	.3790+03	-55.0
336300	014	350	-44.7	.2476+03	.3776+03	-55.2
336400	C15	355	-45.0	.2465+03	.3763+03	-55.5
336500	016	350	-45.2	.2454+03	.3750+03	-55.7
336600	C15	352	-45.4	.2443+03	.3737+03	-56.0
336700	C15	367	-45.7	.2432+03	.3724+03	-56.3
336800	C16	354	-45.9	.2421+03	.3711+03	-56.5
336900	C16	348	-46.2	.2410+03	.3698+03	-56.7
337000	C15	343	-46.4	.2399+03	.3685+03	-57.0
337100	C16	344	-46.7	.2388+03	.3674+03	-57.2
337200	C17	347	-47.0	.2377+03	.3662+03	-57.5
337300	-	338	-47.3	.2366+03	.3650+03	-57.7
337400	C16	345	-47.6	.2355+03	.3638+03	-58.0
337500	C16	337	-47.9	.2344+03	.3626+03	-58.2
337600	C17	348	-48.3	.2337+03	.3615+03	-58.5
337700	019	337	-48.6	.2323+03	.3603+03	-58.7
337800	C20	336	-48.9	.2312+03	.3592+03	-59.0
337900	021	344	-49.2	.2302+03	.3580+03	-59.2
338000	C21	339	-49.5	.2291+03	.3569+03	-59.5
338100	C21	343	-49.7	.2280+03	.3555+03	-59.7
338200	C21	321	-49.9	.2270+03	.3542+03	-59.9
338300	-	343	-50.1	.2259+03	.3529+03	-60.0
338400	019	340	-50.3	.2249+03	.3516+03	-60.2
338500	C22	346	-50.5	.2236+03	.3503+03	-60.4
338600	C19	345	-50.8	.2228+03	.3490+03	-60.6
338700	019	347	-51.0	.2218+03	.3477+03	-60.8
338800	C16	346	-51.2	.2207+03	.3468+03	-60.9
338900	C17	-	-51.4	.2197+03	.3451+03	-61.1
339000	C17	34	-51.6	.2187+03	.3439+03	-61.3
339100	C15	342	-51.9	.2177+03	.3427+03	-61.5
339200	017	347	-52.1	.2166+03	.3414+03	-61.8
339300	C15	41	-52.4	.2156+03	.3402+03	-62.0
339400	012	332	-52.6	.2146+03	.3391+03	-62.2
339500	C12	231	-52.9	.2136+03	.3379+03	-62.4
339600	016	337	-53.2	.2126+03	.3367+03	-62.7
339700	011	320	-53.4	.2116+03	.3355+03	-62.9
339800	C10	323	-53.7	.2106+03	.3333+03	-63.1
339900	C11	323	-53.9	.2096+03	.3331+03	-63.4

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TABLE 4. (Continued)

ALTITUDE (FT)	SPD SPEC (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
344900	C11	321	-54.2	.2086*0.3	.3320*0.3	-63.6
345100	C14	328	-54.4	.2077*0.3	.3308*0.3	-63.8
345200	C12	320	-54.7	.2067*0.3	.3296*0.3	-64.1
345300	C12	348	-54.9	.2057*0.3	.3284*0.3	-64.3
345400	C14	323	-55.2	.2047*0.3	.3272*0.3	-64.5
345500	C15	344	-55.4	.2037*0.3	.3260*0.3	-64.7
345600	C16	326	-55.7	.2028*0.3	.3249*0.3	-65.0
345700	C16	355	-55.9	.2018*0.3	.3237*0.3	-65.2
345800	C19	347	-56.2	.2009*0.3	.3225*0.3	-65.4
345900	C19	351	-56.4	.1999*0.3	.3214*0.3	-65.7
346000	C21	358	-56.7	.1989*0.1	.3202*0.3	-65.9
346100	C20	353	-56.9	.1980*0.3	.3190*0.3	-9999.
346200	C22	351	-57.2	.1970*0.3	.3178*0.3	-9999.
346300	C23	353	-57.4	.1961*0.3	.3167*0.3	-9999.
346400	C21	C01	-57.7	.1952*0.3	.3155*0.3	-9999.
346500	C20	C51	-57.9	.1942*0.3	.3143*0.3	-9999.
346600	C19	C01	-58.1	.1933*0.3	.3132*0.3	-9999.
346700	C19	C03	-58.4	.1924*0.3	.3120*0.3	-9999.
346800	C16	352	-58.6	.1914*0.3	.3109*0.3	-9999.
346900	C26	035	-58.9	.1905*0.3	.3097*0.3	-9999.
347000	C22	356	-59.1	.1896*0.3	.3086*0.3	-9999.
347100	C24	003	-59.3	.1887*0.3	.3074*0.3	-9999.
347200	C25	357	-59.6	.1876*0.3	.3063*0.3	-7999.
347300	C26	354	-59.8	.1869*0.3	.3051*0.3	-9999.
347400	C26	354	-60.1	.1860*0.3	.3040*0.3	-9999.
347500	C26	356	-60.3	.1851*0.3	.3029*0.3	-9999.
347600	C30	350	-60.5	.1842*0.3	.3017*0.3	-9999.
347700	C30	356	-60.6	.1833*0.3	.3006*0.3	-9999.
347800	C29	351	-61.0	.1824*0.3	.2995*0.3	-9999.
347900	C32	354	-61.3	.1815*0.3	.2984*0.3	-9999.
348000	C32	350	-61.5	.1806*0.3	.2973*0.3	-9999.
348100	C31	357	-61.6	.1797*0.3	.2962*0.3	-9999.
348200	C32	354	-62.0	.1788*0.3	.2951*0.3	-9999.
348300	C32	357	-62.3	.1780*0.3	.2940*0.3	-9999.
348400	C32	355	-62.5	.1771*0.3	.2929*0.3	-9999.
348500	C33	356	-62.8	.1762*0.3	.2918*0.3	-9999.
348600	C32	359	-63.1	.1754*0.3	.2908*0.3	-9999.
348700	C32	357	-63.3	.1745*0.3	.2897*0.3	-9999.
348800	C31	357	-63.6	.1736*0.3	.2886*0.3	-9999.
348900	C26	002	-63.6	.1728*0.3	.2876*0.3	-9999.
349000	C35	036	-64.1	.1719*0.3	.2865*0.3	-9999.
349100	C31	356	-64.4	.1711*0.3	.2855*0.3	-9999.
349200	C24	001	-64.6	.1702*0.3	.2844*0.3	-9999.
349300	C29	601	-64.9	.1694*0.3	.2834*0.3	-9999.
349400	C29	008	-65.2	.1686*0.3	.2823*0.3	-9999.
349500	C26	003	-65.4	.1677*0.3	.2813*0.3	-9999.
349600	C30	010	-65.7	.1669*0.3	.2803*0.3	-9999.
349700	C25	003	-66.0	.1661*0.3	.2792*0.3	-9999.
349800	C30	C6	-66.3	.1652*0.3	.2782*0.3	-9999.
349900	C26	007	-66.5	.1644*0.3	.2772*0.3	-9999.

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TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	
					NEW POINT (DEG C)	OLD POINT (DEG C)
342200	0.30	032	-66.6	.1638-03	.2762-03	-9999.
343100	0.31	034	-67.0	.1628-03	.2750-03	-9999.
345200	C31	006	-67.1	.1620-03	.2739-03	-9999.
345300	034	005	-67.3	.1611-03	.2727-03	-9999.
345400	033	003	-67.5	.1603-03	.2716-03	-9999.
345500	C33	038	-67.6	.1595-03	.2704-03	-9999.
345600	033	015	-67.8	.1587-03	.2693-03	-9999.
345700	C32	020	-68.0	.1579-03	.2682-03	-9999.
345800	032	015	-68.2	.1571-03	.2670-03	-9999.
345900	030	016	-68.3	.1563-03	.2659-03	-9999.
346000	C30	023	-68.5	.1556-03	.2648-03	-9999.
346100	026	027	-68.7	.1548-03	.2637-03	-9999.
346200	D25	030	-68.9	.1540-03	.2626-03	-9999.
346300	C23	032	-69.1	.1532-03	.2615-03	-9999.
346400	022	031	-69.3	.1524-03	.2604-03	-9999.
346500	C20	029	-69.4	.1517-03	.2594-03	-9999.
346600	019	026	-69.6	.1509-03	.2583-03	-9999.
346700	017	015	-69.8	.1501-03	.2572-03	-9999.
346800	C17	019	-70.0	.1494-03	.2562-03	-9999.
346900	020	052	-70.2	.1486-03	.2551-03	-9999.
347000	018	004	-70.4	.1478-03	.2540-03	-9999.
347100	022	344	-70.4	.1471-03	.2529-03	-9999.
347200	C21	339	-70.4	.1464-03	.2519-03	-9999.
347300	024	339	-70.3	.1456-03	.2501-03	-9999.
347400	C25	336	-70.3	.1449-03	.2488-03	-9999.
347500	027	341	-70.3	.1441-03	.2475-03	-9999.
347600	031	333	-70.3	.1434-03	.2462-03	-9999.
347700	033	335	-70.3	.1427-03	.2450-03	-9999.
347800	034	336	-70.2	.1419-03	.2437-03	-9999.
347900	037	329	-70.2	.1412-03	.2424-03	-9999.
348000	035	334	-70.2	.1405-03	.2412-03	-9999.
348100	030	337	-70.1	.1398-03	.2398-03	-9999.
348200	026	345	-70.0	.1391-03	.2385-03	-9999.
348300	024	343	-69.8	.1384-03	.2371-03	-9999.
348400	020	345	-69.7	.1377-03	.2358-03	-9999.
348500	016	323	-69.6	.1370-03	.2344-03	-9999.
348600	013	331	-69.5	.1363-03	.2332-03	-9999.
348700	013	312	-69.4	.1356-03	.2318-03	-9999.
348800	010	307	-69.2	.1349-03	.2305-03	-9999.
348900	011	309	-69.1	.1342-03	.2292-03	-9999.
349000	014	305	-69.0	.1335-03	.2279-03	-9999.
349100	011	295	-68.9	.1329-03	.2266-03	-9999.
349200	015	270	-68.8	.1322-03	.2254-03	-9999.
349300	C13	262	-68.7	.1315-03	.2241-03	-9999.
349400	017	259	-68.6	.1309-03	.2229-03	-9999.
349500	019	256	-68.4	.1302-03	.2216-03	-9999.
349600	020	260	-68.3	.1296-03	.2204-03	-9999.
349700	022	264	-68.2	.1289-03	.2191-03	-9999.
349800	026	272	-68.1	.1283-03	.2179-03	-9999.
349900	027	274	-68.0	.1276-03	.2167-03	-9999.

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TABLE 4. (Continued)

ALTITUDE (FT.)	IND. SPEED (FT./SEC.)	IND. DIRECTION (DEG.)	TEMPERATURE (DEG. C.)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M ³)	DEW POINT (DEG. C.)
353963	0.27	263	-67.9	.1270+03	.2155+03	-9999.
354160	0.27	269	-67.9	.1263+03	.2144+03	-9999.
354265	0.29	294	-67.8	.1257+03	.2132+03	-9999.
354360	0.26	302	-67.7	.1251+03	.2121+03	-9999.
354460	0.26	334	-67.7	.1244+03	.2110+03	-9999.
354563	0.24	304	-67.6	.1238+03	.2059+03	-9999.
354663	0.21	314	-67.6	.1232+03	.2068+03	-9999.
354763	0.21	323	-67.6	.1226+03	.2077+03	-9999.
354860	0.22	306	-67.5	.1220+03	.2066+03	-9999.
354960	0.17	320	-67.4	.1213+03	.2055+03	-9999.
355063	0.16	276	-67.4	.1207+03	.2044+03	-9999.
355163	0.12	263	-67.4	.1201+03	.2034+03	-9999.
355263	0.15	247	-67.4	.1195+03	.2024+03	-9999.
355366	0.15	236	-67.4	.1189+03	.2013+03	-9999.
355463	0.17	245	-67.4	.1183+03	.2001+03	-9999.
355563	0.22	250	-67.3	.1177+03	.1993+03	-9999.
355660	0.19	247	-67.3	.1171+03	.1983+03	-9999.
355763	0.22	260	-67.3	.1166+03	.1973+03	-9999.
355860	0.24	252	-67.3	.1160+03	.1963+03	-9999.
355963	0.20	248	-67.3	.1154+03	.1953+03	-9999.
356063	0.22	244	-67.3	.1148+03	.1943+03	-9999.
356160	0.20	249	-67.3	.1142+03	.1934+03	-9999.
356263	0.19	253	-67.4	.1137+03	.1925+03	-9999.
356363	0.16	246	-67.4	.1131+03	.1915+03	-9999.
356463	0.13	229	-67.5	.1125+03	.1906+03	-9999.
356560	0.19	228	-67.5	.1120+03	.1897+03	-9999.
356660	0.19	229	-67.6	.1114+03	.1888+03	-9999.
356760	0.15	229	-67.6	.1108+03	.1879+03	-9999.
356860	0.19	236	-67.7	.1103+03	.1870+03	-9999.
356963	0.19	236	-67.7	.1097+03	.1861+03	-9999.
357063	0.17	234	-67.8	.1092+03	.1852+03	-9999.
357163	0.18	243	-67.8	.1086+03	.1843+03	-9999.
357263	0.16	246	-67.8	.1081+03	.1833+03	-9999.
357363	0.16	257	-67.6	.1075+03	.1824+03	-9999.
357460	0.15	262	-67.8	.1070+03	.1815+03	-9999.
357563	0.13	260	-67.7	.1065+03	.1806+03	-9999.
357663	0.12	275	-67.7	.1059+03	.1797+03	-9999.
357763	0.12	277	-67.7	.1054+03	.1787+03	-9999.
357860	0.07	268	-67.7	.1049+03	.1778+03	-9999.
357960	0.07	268	-67.7	.1043+03	.1769+03	-9999.
358063	0.04	271	-67.7	.1038+03	.1760+03	-9999.
358163	0.04	311	-67.7	.1033+03	.1752+03	-9999.
358263	0.04	013	-67.8	.1028+03	.1744+03	-9999.
358363	0.04	028	-67.8	.1023+03	.1735+03	-9999.
358460	0.04	053	-67.9	.1017+03	.1727+03	-9999.
358560	0.05	076	-67.9	.1012+03	.1719+03	-9999.
358660	0.04	093	-66.0	.1007+03	.1710+03	-9999.
358760	0.04	011	-68.0	.1002+03	.1702+03	-9999.
358860	0.02	119	-68.1	.9972+02	.1694+03	-9999.
358960	0.05	055	-68.1	.9922+02	.1686+03	-9999.

TABLE 4. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	NEW POINT (DEG C)
050000	0.06	-66.2	-68.2	.9672•02	.1678•03	-9999.
050000	0.07	-65.5	-67.7	.9926•02	.1514•03	-9999.
050000	0.08	-104	-66.0	.8489•C2	.1428•03	-9999.
050000	0.07	126	-63.9	.8079•02	.1345•03	-9999.
050000	0.09	131	-63.2	.7690•02	.1276•03	-9999.
050000	0.11	123	-63.2	.7321•02	.1215•03	-9999.
060000	0.13	107	-62.9	.6969•02	.1155•03	-9999.
063000	0.17	107	-62.2	.6636•02	.1096•03	-9999.
064000	0.16	110	-62.0	.6319•02	.1043•03	-9999.
065000	0.14	107	-59.7	.6019•02	.9823•02	-9999.
066000	0.12	103	-56.9	.5735•02	.9325•02	-9999.
067000	0.12	0.98	-53.9	.5465•02	.8866•02	-5.999.
068000	0.12	0.97	-57.6	.5209•02	.8427•02	-5.999.
069000	0.14	0.98	-56.5	.4966•02	.7985•02	-9999.
070000	0.17	0.90	-56.6	.4734•02	.7623•02	-9999.
071000	0.20	0.93	-56.6	.4514•02	.7262•02	-9999.
072000	0.24	0.81	-55.9	.4304•02	.6902•02	-9999.
073000	0.26	0.25	-55.0	.4105•02	.6555•02	-9999.
074000	0.29	0.90	-54.4	.3916•02	.6236•02	-9999.
075000	0.31	0.94	-53.0	.3736•02	.5912•02	-9999.
076000	0.33	0.98	-51.2	.3565•02	.5596•02	-9999.
077000	0.36	102	-50.5	.3404•02	.5326•02	-5.999.
078000	0.41	108	-50.8	.3249•02	.5090•02	-9999.
079000	0.43	112	-50.6	.3102•02	.4856•02	-9999.
080000	0.43	116	-49.6	.2962•02	.4620•02	-9999.
081000	0.46	113	-47.7	.2829•02	.4371•02	-9999.
082000	0.36	110	-47.0	.2703•02	.4164•02	-9999.
083000	0.39	106	-47.0	.2582•02	.3977•02	-9999.
084000	0.42	106	-46.2	.2467•02	.3787•02	-9999.
085000	0.45	103	-45.1	.2358•02	.3602•02	-9999.
086000	0.47	100	-44.3	.2254•02	.3431•02	-9999.
087000	0.49	0.95	-44.1	.2155•02	.3278•02	-9999.
088000	0.49	0.90	-43.8	.2060•02	.3129•02	-9999.
089000	0.48	0.87	-43.2	.1970•02	.2984•02	-9999.
090000	0.45	0.66	-42.1	.1684•02	.2841•02	-9999.
091000	0.43	0.65	-41.3	.1802•02	.2708•02	-9999.
092000	0.42	0.83	-40.9	.1723•02	.2564•02	-9999.
093000	0.43	0.81	-40.7	.1649•02	.2471•02	-9999.
094000	0.45	0.81	-39.9	.1577•02	.2355•02	-9999.
095000	0.47	0.61	-38.7	.1505•02	.2236•02	-9999.
096000	0.50	0.69	-40.0	.1438•02	.2149•02	-9999.
097000	0.52	100	-39.3	.1372•02	.2043•02	-9999.
098000	0.50	103	-38.6	.1313•02	.1950•02	-9999.
099000	0.52	0.99	-38.0	.1256•02	.1861•02	-9999.
100000	0.54	0.94	-37.3	.1203•02	.1776•02	-9999.
101000	0.52	0.92	-37.0	.1151•02	.1698•02	-9999.
102000	0.55	0.93	-37.4	.1102•02	.1629•02	-9999.
103000	0.55	0.98	-38.0	.1055•02	.1563•02	-9999.
104000	0.57	108	-38.1	.1010•02	.1497•02	-9999.

ORIGINAL PAGE IS
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**ORIGINAL FLIGHT
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TABLE 4. (Continued)

ALTITUDE (FT.)	WIND SPEED (FT/SEC.)	WIND DIRECTION (0°C)	TEMPERATURE (0°C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)	
						11	12
105000	0.55	123	-38.0	.9667+01	1432+02	-9999.	-9999.
106000	0.54	124	-37.8	.9253+01	1370+02	-9999.	-9999.
107000	0.52	120	-37.6	.8857+01	1310+02	-9999.	-9999.
108000	0.52	117	-37.4	.8479+01	1253+02	-9999.	-9999.
109000	0.54	114	-37.2	.8117+01	1198+02	-9999.	-9999.
110000	0.55	108	-37.0	.7771+01	1146+02	-9999.	-9999.
111000	0.57	103	-36.0	.7441+01	1093+02	-9999.	-9999.
112000	0.59	100	-34.2	.7129+01	1039+02	-9999.	-9999.
113000	0.57	97	-32.6	.6829+01	987+01	-9999.	-9999.
114000	0.55	92	-31.5	.6543+01	9431+01	-9999.	-9999.
115000	0.57	86	-30.8	.6271+01	9014+01	-9999.	-9999.
116000	0.62	78	-30.5	.6010+01	8630+01	-9999.	-9999.
117000	0.69	73	-30.4	.5761+01	8268+01	-9999.	-9999.
118000	0.77	72	-30.1	.5522+01	7917+01	-9999.	-9999.
119000	0.86	73	-29.4	.5294+01	7566+01	-9999.	-9999.
120000	0.89	78	-28.3	.5076+01	7221+01	-9999.	-9999.
121000	0.87	61	-27.1	.4868+01	6893+01	-9999.	-9999.
122000	0.67	77	-26.1	.4669+01	6563+01	-9999.	-9999.
123000	0.67	77	-25.1	.4486+01	6290+01	-9999.	-9999.
124000	0.91	74	-24.8	.4296+01	6028+01	-9999.	-9999.
125000	0.94	73	-24.1	.4124+01	5769+01	-9999.	-9999.
126000	0.99	76	-22.6	.3958+01	5550+01	-9999.	-9999.
127000	1.01	84	-21.2	.3800+01	5254+01	-9999.	-9999.
128000	0.97	94	-18.7	.3649+01	4995+01	-9999.	-9999.
129000	0.94	102	-15.0	.3505+01	4731+01	-9999.	-9999.
130000	0.89	112	-13.7	.3369+01	4525+01	-9999.	-9999.
131000	0.86	118	-14.2	.3238+01	4357+01	-9999.	-9999.
132000	0.84	118	-14.6	.3112+01	4197+01	-9999.	-9999.
133000	0.84	113	-15.2	.2991+01	4039+01	-9999.	-9999.
134000	0.87	106	-15.2	.2674+01	3881+01	-9999.	-9999.
135000	0.96	101	-14.8	.2762+01	3725+01	-9999.	-9999.
136000	1.04	97	-14.5	.2655+01	3575+01	-9999.	-9999.
137000	1.13	94	-14.1	.2552+01	3432+01	-9999.	-9999.
138000	1.16	93	-13.8	.2453+01	3295+01	-9999.	-9999.
139000	1.16	94	-13.5	.2358+01	3163+01	-9999.	-9999.
140000	1.16	94	-13.2	.2267+01	3037+01	-9999.	-9999.
141000	1.13	94	-12.9	.2179+01	2916+01	-9999.	-9999.
142000	1.06	95	-12.6	.2095+01	2801+01	-9999.	-9999.
143000	1.03	96	-12.3	.2014+01	2690+01	-9999.	-9999.
144000	1.01	97	-12.0	.1936+01	2583+01	-9999.	-9999.
145000	1.03	97	-11.7	.1962+01	2461+01	-9999.	-9999.
146000	1.06	96	-11.5	.1791+01	2384+01	-9999.	-9999.
147000	1.13	95	-11.2	.1722+01	2250+01	-9999.	-9999.
148000	1.24	94	-11.0	.1656+01	2200+01	-9999.	-9999.
149000	1.26	93	-10.3	.1592+01	2111+01	-9999.	-9999.
150000	1.31	93	-9.3	.1532+01	2022+01	-9999.	-9999.
151000	1.35	92	-7.7	.1473+01	1934+01	-9999.	-9999.
152000	1.33	91	-6.5	.1416+01	1852+01	-9999.	-9999.
153000	1.31	93	-5.6	.1365+01	1777+01	-9999.	-9999.
154000	1.26	89	-5.1	.1313+01	1707+01	-9999.	-9999.

TABLE 4. (Continued)

ALTITUDE IFTI	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEN. POINT (DEG C)
155000	124	088	-4.7	.1264+0.01	.1640+0.01	-9999.
156000	123	086	-4.3	.1217+0.01	.1577+0.01	-9999.
157000	124	086	-4.1	.1171+0.01	.1517+0.01	-9999.
158000	126	084	-4.1	.1128+0.01	.1460+0.01	-9999.
159000	126	084	-4.2	.1086+0.01	.1406+0.01	-9999.
160000	125	085	-4.4	.1045+0.01	.1355+0.01	-9999.
161000	141	085	-4.7	.1006+0.01	.1305+0.01	-9999.
162000	142	085	-4.9	.9683+0.01	.1257+0.01	-9999.
163000	157	085	-5.1	.9320+0.01	.1211+0.01	-9999.
164000	170	086	-5.3	.8971+0.01	.1167+0.01	-9999.
165000	175	086	-5.6	.8635+0.01	.1124+0.01	-9999.
166000	163	087	-5.8	.8331+0.01	.1083+0.01	-9999.
167000	167	090	-6.1	.7929+0.01	.1043+0.01	-9999.
168000	177	091	-6.3	.7698+0.01	.1005+0.01	-9999.
169000	185	094	-6.5	.7468+0.01	.9679+0.01	-9999.
170000	185	096	-6.7	.7130+0.01	.9324+0.01	-9999.
171000	183	097	-7.0	.6861+0.01	.8980+0.01	-9999.
172000	172	093	-7.3	.6602+0.01	.8653+0.01	-9999.
173000	175	095	-8.1	.6353+0.01	.8351+0.01	-9999.
174000	190	097	-9.2	.6112+0.01	.8066+0.01	-9999.
175000	202	098	-9.9	.5880+0.01	.7780+0.01	-9999.
176000	200	096	-9.3	.5656+0.01	.7467+0.01	-9999.
177000	187	093	-9.1	.5491+0.01	.7179+0.01	-9999.
178000	173	093	-10.1	.5235+0.01	.6932+0.01	-9999.
179000	177	094	-10.9	.5035+0.01	.6682+0.01	-9999.
180000	162	096	-11.6	.4842+0.01	.6455+0.01	-9999.
181000	164	097	-13.0	.4656+0.01	.6235+0.01	-9999.
182000	180	097	-13.6	.4477+0.01	.6009+0.01	-9999.
183000	172	096	-14.7	.4303+0.01	.5801+0.01	-9999.
184000	179	095	-15.7	.4137+0.01	.5597+0.01	-9999.
185000	167	094	-16.4	.3975+0.01	.5393+0.01	-9999.
186000	165	093	-17.4	.3820+0.01	.5203+0.01	-9999.
187000	160	090	-18.1	.3671+0.01	.5014+0.01	-9999.
188000	165	090	-19.2	.3526+0.01	.4836+0.01	-9999.
189000	175	092	-19.9	.3387+0.01	.4658+0.01	-9999.
190000	184	093	-20.8	.3253+0.01	.4490+0.01	-9999.
191000	179	093	-21.7	.3124+0.01	.4328+0.01	-9999.
192000	172	092	-22.5	.3000+0.01	.4170+0.01	-9999.
193000	170	092	-23.2	.2880+0.01	.3914+0.01	-9999.
194000	172	094	-24.3	.2764+0.01	.3670+0.01	-9999.
195000	168	095	-25.6	.2653+0.01	.3433+0.01	-9999.
196000	172	100	-26.9	.2546+0.01	.3202+0.01	-9999.
197000	166	104	-28.2	.2442+0.01	.3074+0.01	-9999.
198000	167	108	-29.6	.2342+0.01	.3350+0.01	-9999.
199000	165	111	-30.9	.2246+0.01	.3230+0.01	-9999.
200000	177	111	-32.3	.2153+0.01	.3114+0.01	-9999.
201000	175	110	-33.6	.2064+0.01	.3002+0.01	-9999.
202000	175	107	-34.7	.1977+0.01	.2889+0.01	-9999.
203000	175	104	-36.3	.1894+0.01	.2786+0.01	-9999.
204000	168	101	-37.7	.1814+0.01	.2684+0.01	-9999.

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TABLE 4. (Continued)

ALTITUDE (FT.)	WIND SPEED (FT./SEC.)	WIND DIRECTION (DEG.)	TEMPERATURE (DEG. C.)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M ³)		DEW POINT (DEG. C.)
					0.2563+00	-9.999.	
205000	1.67	0.99	0.97	-39.8	0.1737+00	0.2483+00	-9.999.
206000	1.68	0.95	-	-40.8	0.1663+00	0.2387+00	-9.999.
207000	1.63	0.95	-	-41.6	0.1592+00	0.2294+00	-9.999.
208000	1.72	0.93	-	-42.6	0.1524+00	0.2203+00	-9.999.
209000	1.85	0.92	-	-43.4	0.1458+00	0.2115+00	-9.999.
210000	2.02	0.92	-	-	0.1395+00	0.2031+00	-9.999.
211000	2.22	0.91	-	-44.3	0.1334+00	0.1949+00	-9.999.
212000	2.19	0.89	-	-45.0	0.1276+00	0.1870+00	-9.999.
213000	2.16	0.87	-	-45.4	0.1220+00	0.1800+00	-9.999.
214000	2.14	0.87	-	-47.5	0.1166+00	0.1731+00	-9.999.
215000	2.25	0.86	-	-48.7	0.1115+00	0.1658+00	-9.999.
216000	2.91	0.86	-	-49.3	0.1065+00	0.1591+00	-9.999.
217000	2.33	0.84	-	-50.3	0.1018+00	0.1528+00	-9.999.
218000	2.22	0.82	-	-51.5	0.9720+00	0.1479+00	-9.999.
219000	2.14	0.81	-	-53.0	0.9290+00	0.1420+00	-9.999.
220000	2.21	0.81	-	-54.9	0.8860+00	0.1364+00	-9.999.
221000	2.31	0.81	-	-56.1	0.8460+00	0.1358+00	-9.999.
222000	2.31	0.91	-	-58.2	0.8070+00	0.1306+00	-9.999.
223000	2.11	0.93	-	-62.5	0.7620+00	0.1272+00	-9.999.
224000	1.87	0.95	-	-66.0	0.7330+00	0.1232+00	-9.999.
225000	1.68	0.96	-	-69.0	0.7060+00	0.1205+00	-9.999.
226000	1.13	1.18	-	-71.2	0.6720+00	0.1159+00	-9.999.
227000	0.9	1.19	-	-69.3	0.6450+00	0.1102+00	-9.999.
228000	0.89	1.19	-	-69.2	0.6140+00	0.1049+00	-9.999.
229000	0.81	1.16	-	-67.2	0.5840+00	0.9877+00	-9.999.
230000	0.70	1.12	-	-69.9	0.5560+00	0.9531+00	-9.999.
231000	0.62	1.06	-	-71.2	0.5300+00	0.9140+00	-9.999.
232000	0.55	0.97	-	-73.3	0.5050+00	0.8602+00	-9.999.
233000	0.52	0.87	-	-76.3	0.4790+00	0.8477+00	-9.999.
234000	0.50	0.76	-	-78.2	0.4550+00	0.8129+00	-9.999.
235000	0.52	0.67	-	-80.4	0.4310+00	0.7791+00	-9.999.
236000	0.55	0.59	-	-81.5	0.4090+00	0.7434+00	-9.999.
237000	0.60	0.53	-	-80.8	0.3880+00	0.7026+00	-9.999.
238000	0.67	0.49	-	-78.2	0.3680+00	0.6574+00	-9.999.
239000	0.70	0.46	-	-78.6	0.3500+00	0.6266+00	-9.999.
240000	0.74	0.43	-	-77.4	0.3320+00	0.5908+00	-9.999.
241000	0.79	0.40	-	-75.9	0.3160+00	0.5580+00	-9.999.
242000	0.82	0.38	-	-75.2	0.2950+00	0.5278+00	-9.999.
243000	0.86	0.37	-	-74.2	0.2850+00	0.4989+00	-9.999.
244000	0.69	0.35	-	-74.2	0.2710+00	0.4744+00	-9.999.
245000	0.92	0.33	-	-74.4	0.2570+00	0.4513+00	-9.999.
246000	0.96	0.31	-	-	0.2450+00	0.4270+00	-9.999.
247000	0.97	0.29	-	-72.2	0.2330+00	0.3812+00	-9.999.
248000	0.95	0.28	-	-71.2	0.2210+00	0.3595+00	-9.999.
249000	1.01	0.26	-	-69.7	0.2100+00	0.3399+00	-9.999.
250000	1.04	0.24	-	-68.2	0.2000+00	0.3246+00	-9.999.
251000	1.02	0.22	-	-68.2	0.1910+00	0.3093+00	-9.999.
252000	1.05	0.21	-	-	0.1820+00	0.2940+00	-9.999.
253000	1.11	0.19	-	-	0.1730+00	0.2787+00	-9.999.
254000	1.13	0.18	-	-68.2	0.1640+00	0.2787+00	-9.999.

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TABLE 4. (Continued)

ORIGINAL PAGE IS
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TABLE 4. (Concluded)

ATTITUDE (DEG)	EFFECT (DEG)		EFFECT (DEG)		EFFECT (DEG)		EFFECT (DEG)		DENSITY (DEG/P3)		DEP. POINT (DEG C)	
	181/221	191/221	191/221	191/221	191/221	191/221	191/221	191/221	191/221	191/221	191/221	191/221
19.522	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-23.8	-15.70-03	.2340-03	-2999.
19.523	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-9.6	.13.70-01	.2330-03	-999.
19.524	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-92.1	.12.10-03	.1210-03	-2999.
19.525	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-35.6	.10.70-03	.1070-03	-999.
19.526	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-29.1	.9.60-06	.1240-03	-2999.
19.527	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-22.6	.8350-04	.1690-03	-999.
19.528	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-16.1	.7370-03	.9210-03	-2999.
19.529	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-6.2	.6680-04	.8160-04	-999.
19.530	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.5	.6050-04	.7710-04	-999.
19.531	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	13.2	.5470-04	.6190-04	-999.
19.532	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	23.5	.4940-04	.5790-04	-999.
19.533	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	32.7	.4450-04	.6690-04	-999.
19.534	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	61.1	.3950-04	.6110-04	-999.
19.535	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	54.2	.3720-04	.3630-04	-999.
19.536	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	65.7	.3420-04	.3220-04	-999.
19.537	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	77.6	.3160-04	.2860-04	-999.
19.538	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	89.4	.2920-04	.2260-04	-999.
19.539	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	101.6	.2710-04	.2290-04	-999.
19.540	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	119.1	.2520-04	.2350-04	-999.
19.541	1.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	126.6	.2350-04	.1650-04	-999.

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TABLE 5. STS-4 FINAL SRB DESCENT METEOROLOGICAL DATA TAPE

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ALTITUDE (FT)	AIR SPEED (FT/SEC)	WIND DIRECTION (0 DEG)	TEMPERATURE (0 DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
50,000	003	210	30.1	1018.00	1.156600	25.4
60,000	011	322	24.4	9857.03	1.142004	22.1
70,000	011	315	22.0	9520.03	1.113305	20.5
80,000	009	314	20.6	9193.03	1.082004	18.2
90,000	011	323	18.4	8875.03	1.053004	16.4
105,000	014	315	16.2	8565.03	1.023004	15.1
116,000	013	307	15.6	8265.03	992001	0.7
127,000	015	302	14.2	7974.03	9623.03	6.1
136,000	020	291	12.5	7691.03	93324.3	5.8
199,000	025	290	10.6	7417.03	9072.03	2.4
210,000	027	293	8.8	7150.03	8808.03	-0.8
211,000	026	288	7.5	6892.03	8537.03	-0.0
212,000	027	287	5.9	6642.03	8270.03	-1.1
213,000	034	294	3.8	6399.03	8028.03	-0.5
214,000	036	294	1.8	6163.03	7791.03	-1.5
215,000	035	293	-1.3	5938.03	7587.03	-7.0
216,000	036	296	-3.1	5712.03	7356.03	-1.5
217,000	039	294	-5.2	5496.03	7149.03	-9.0
218,000	036	291	-5.9	5282.03	6887.03	-22.7
219,000	036	290	-7.4	5085.03	6660.03	-70.4
220,000	034	284	-8.6	4880.03	6433.03	-38.3
221,000	033	288	-10.4	4702.03	6226.03	-16.9
222,000	032	287	-12.4	4520.03	6032.03	-39.6
223,000	031	287	-14.5	4343.03	5866.03	-72.0
224,000	029	290	-16.2	4172.03	5652.03	-25.4
225,000	027	290	-18.0	4006.03	5467.03	-30.1
226,000	026	241	-20.3	3886.03	5287.03	-39.0
227,000	025	277	-23.4	3691.03	5145.03	-27.4
228,000	023	278	-25.3	3580.03	4973.03	-29.0
029,000	019	275	-28.4	3394.03	4882.03	-32.5
031,000	015	282	-28.7	3231.03	4656.03	-36.2
031,000	016	310	-31.4	3117.03	4492.03	-31.8
032,000	017	327	-33.9	2936.03	4387.03	-31.5
033,000	016	336	-36.1	2859.03	4261.03	-31.0
034,000	019	365	-38.7	2736.03	4105.03	-30.5
035,000	015	352	-40.9	2617.03	3926.03	-31.1
036,000	016	354	-46.8	2502.03	3810.03	-31.2
037,000	015	355	-46.9	2391.03	3681.03	-30.1
038,000	011	357	-48.1	2281.03	3567.03	-29.6
039,000	009	004	-50.9	2180.03	3417.03	-30.4
040,000	010	006	-53.1	2089.03	3294.03	-32.5
041,000	011	003	-56.0	1984.03	3185.03	-35.0
042,000	013	004	-58.9	1881.03	3075.03	-37.1
043,000	020	002	-61.8	1801.03	2969.03	-39.9
044,000	023	002	-63.8	1715.03	2858.03	-39.9
045,000	025	359	-65.8	1632.03	2742.03	-41.9
046,000	022	353	-68.1	1552.03	2637.03	-39.8
047,000	026	347	-68.8	1475.03	2515.03	-39.9
048,000	026	339	-68.5	1401.03	2386.03	-39.9
049,000	021	335	-65.9	1334.03	2262.03	-39.9

TABLE 5. (Continued)

ALTITUDE (FT)	BLAST SPEED (FT/SEC)	BLAST DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
050000	019	0.0	-65.9	12694.1	2134.03	-999.
051000	024	330	-65.7	1207.03	2027.03	-999.
052000	025	331	-65.5	1149.03	1923.03	-999.
053000	020	328	-66.1	1093.03	1839.03	-999.
054000	018	321	-67.6	1039.03	1762.03	-999.
055000	006	303	-68.1	980.02	1679.03	-999.
056000	007	291	-69.8	9196.02	1610.03	-999.
057000	006	310	-67.9	8932.02	1516.03	-999.
058000	006	320	-68.1	8495.02	1429.03	-999.
059000	006	346	-65.1	8083.02	1353.03	-999.
060000	001	011	-63.8	7493.02	1240.03	-999.
061000	005	046	-63.2	7323.02	1215.03	-999.
062000	007	064	-63.0	6971.02	1156.03	-999.
063000	011	095	-62.6	6637.02	1098.03	-999.
064000	012	092	-62.2	6320.02	1048.03	-999.
065000	015	092	-61.5	6018.02	9905.02	-999.
066000	019	165	-59.6	5711.02	9352.02	-999.
067000	022	149	-58.5	5463.02	8866.02	-999.
068000	022	105	-58.0	5207.02	8431.02	-999.
069000	022	097	-57.3	4963.02	8010.02	-999.
070000	025	085	-55.9	4732.02	7584.02	-999.
071000	027	099	-54.1	4514.02	7179.02	-999.
072000	028	100	-53.2	4306.02	6820.02	-999.
073000	019	061	-52.0	4109.02	6473.02	-599.
074000	015	070	-51.6	3922.02	6167.02	-999.
075000	028	102	-50.6	3744.02	5851.02	-999.
076000	039	127	-50.5	3575.02	5494.02	-999.
077000	041	103	-50.4	3413.02	5176.02	-999.
078000	037	093	-50.3	3258.02	5093.02	-999.
079000	035	085	-50.2	3111.02	4861.02	-999.
080000	074	084	-49.9	2970.02	4615.02	-999.
081000	034	067	-49.9	2837.02	4411.02	-999.
082000	036	091	-48.0	2709.02	4192.02	-999.
083000	040	095	-46.9	2568.02	3985.02	-999.
084000	043	096	-46.8	2437.02	3806.02	-999.
085000	045	095	-46.8	2361.02	3637.02	-999.
086000	045	093	-46.5	2256.02	3471.02	-999.
087000	045	093	-46.2	2157.02	3311.02	-999.
088000	039	089	-45.7	2062.02	3158.02	-999.
089000	044	086	-45.2	1971.02	3012.02	-999.
090000	045	085	-44.7	1884.02	2873.02	-999.
091000	046	084	-44.4	1801.02	2743.02	-999.
092000	296	082	-43.5	1722.02	2612.02	-999.
093000	046	060	-41.6	1646.02	2479.02	-999.
094000	045	079	-41.3	1564.02	2359.02	-999.
095000	046	082	-40.7	1496.02	2255.02	-999.
096000	050	089	-40.7	1438.02	2149.02	-999.
097000	052	100	-39.3	1372.02	2043.02	-999.
098000	150	103	-38.6	1313.02	1950.02	-999.
099000	050	099	-38.0	1256.02	1861.02	-999.

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TABLE 5. (Continued)

ALTITUDE (FT)	MIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
10000.0	0.52	0.92	-37.0	.1151+02	.1698+02	-9999.
101000	0.52	0.93	-37.4	.1102+02	.1629+02	-9999.
102000	0.54	0.98	-38.0	.1055+02	.1563+02	-9999.
103000	0.55	1.08	-38.1	.1010+02	.1492+02	-9999.
104000	0.57	1.17	-38.0	.9667+01	.1432+02	-9999.
105000	0.55	1.17	-37.8	.9253+01	.1370+02	-9999.
106000	0.54	1.23	-37.6	.8857+01	.1310+02	-9999.
107000	0.52	1.20	-37.4	.8479+01	.1253+02	-9999.
108000	0.52	1.17	-37.2	.8117+01	.1198+02	-9999.
109000	0.54	1.14	-37.0	.7721+01	.1146+02	-9999.
110000	0.55	1.06	-36.0	.7441+01	.1093+02	-9999.
112000	0.57	1.03	-34.2	.7122+01	.1013+02	-9999.
113000	0.59	1.00	-32.6	.6828+01	.9887+01	-9999.
114000	0.57	0.97	-31.5	.6543+01	.9431+01	-9999.
115000	0.55	0.92	-30.6	.6271+01	.9018+01	-9999.
116000	0.52	0.84	-30.5	.6010+01	.8630+01	-9999.
117000	0.62	0.78	-30.4	.5761+01	.8268+01	-9999.
118000	0.69	0.73	-30.1	.5522+01	.7917+01	-9999.
119000	0.77	0.72	-29.4	.5294+01	.7566+01	-9999.
120000	0.66	0.71	-28.3	.5076+01	.7227+01	-9999.
121000	0.65	0.78	-27.1	.4868+01	.6869+01	-9999.
122000	0.67	0.61	-26.1	.4666+01	.6583+01	-9999.
123000	0.67	0.77	-25.1	.4480+01	.6290+01	-9999.
124000	0.59	0.74	-24.8	.4298+01	.6028+01	-9999.
125000	0.59	0.73	-24.1	.4124+01	.5769+01	-9999.
126000	0.59	0.76	-22.6	.3958+01	.5500+01	-9999.
127000	1.01	0.84	-21.2	.3800+01	.5254+01	-9999.
128000	0.97	0.95	-18.7	.3649+01	.4995+01	-9999.
129000	0.94	1.02	-15.0	.3505+01	.4731+01	-9999.
130000	0.89	1.12	-13.7	.3368+01	.4525+01	-9999.
131000	0.86	1.18	-14.2	.3228+01	.4357+01	-9999.
132000	0.84	1.18	-14.8	.3112+01	.4197+01	-9999.
133000	0.84	1.13	-15.2	.2991+01	.4039+01	-9999.
134000	0.87	1.06	-15.2	.2874+01	.3881+01	-9999.
135000	0.96	1.01	-14.8	.2762+01	.3725+01	-9999.
136000	1.04	0.97	-14.5	.2655+01	.3575+01	-9999.
137000	1.13	0.94	-14.1	.2552+01	.3432+01	-9999.
138000	1.16	0.93	-13.8	.2453+01	.3295+01	-9999.
139000	1.16	0.94	-13.5	.2358+01	.3163+01	-9999.
140000	1.16	0.94	-13.2	.2261+01	.3031+01	-9999.
141000	1.13	0.94	-12.9	.2179+01	.2916+01	-9999.
142000	1.08	0.95	-12.6	.2095+01	.2801+01	-9999.
143000	1.03	0.96	-12.3	.2014+01	.2690+01	-9999.
144000	1.01	0.97	-12.0	.1936+01	.2583+01	-9999.
145000	1.03	0.97	-11.7	.1862+01	.2481+01	-9999.
146000	1.06	0.98	-11.5	.1791+01	.2388+01	-9999.
147000	1.13	0.95	-11.2	.1722+01	.2290+01	-9999.
148000	1.21	0.94	-11.0	.1656+01	.2200+01	-9999.
149000	1.28	0.93	-10.3	.1592+01	.2111+01	-9999.

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TABLE 5. (Continued)

ALTITUDE (FT)	MIND SPEED (FT/SEC)	MIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
150000	131	0.93	-9.3	16312.01	20224.01	-9999.
151000	135	0.92	-7.7	1473.01	1934.01	-9999.
152000	133	0.91	-6.5	1418.01	1862.01	-9999.
153000	131	0.90	-5.6	1365.01	1777.01	-9999.
154000	124	0.89	-5.1	1313.01	1767.01	-9999.
155000	124	0.88	-4.7	1264.01	1640.01	-9999.
156000	123	0.86	-4.3	1217.01	1577.01	-9999.
157000	124	0.86	-4.1	1171.01	1517.01	-9999.
158000	126	0.85	-4.1	1128.01	1460.01	-9999.
159000	126	0.84	-4.2	1086.01	1406.01	-9999.
160000	135	0.85	-4.4	1045.01	1355.01	-9999.
161000	141	0.85	-4.7	1006.01	1305.01	-9999.
162000	148	0.85	-4.9	9681.00	1251.01	-9999.
163000	157	0.85	-5.1	9320.00	1211.01	-9999.
164000	176	0.65	-5.3	8971.00	1163.01	-9999.
165000	175	0.86	-5.6	8635.00	1112.01	-9999.
166000	163	0.87	-5.6	8311.00	1063.01	-9999.
167000	167	0.90	-6.1	7999.00	1043.01	-9999.
168000	177	0.91	-6.3	7698.00	1005.01	-9999.
169000	185	0.94	-6.5	7408.00	9679.00	-9999.
170000	189	0.96	-6.7	7130.00	9328.00	-9999.
171000	186	0.97	-7.0	6861.00	8980.00	-9999.
172000	172	0.95	-7.3	6602.00	8663.00	-9999.
173000	175	0.95	-8.1	6353.00	8351.00	-9999.
174000	192	0.97	-9.2	6112.00	8063.00	-9999.
175000	202	0.98	-9.9	5880.00	7780.00	-9999.
176000	200	0.96	-5.3	5656.00	7467.00	-9999.
177000	187	0.93	-9.1	5441.00	7179.00	-9999.
178000	173	0.93	-10.1	5235.00	6912.00	-9999.
179000	177	0.94	-10.9	5035.00	6669.00	-9999.
180000	182	0.96	-11.8	4882.00	6455.00	-9999.
181000	184	0.97	-13.0	4656.00	6235.00	-9999.
182000	180	0.97	-13.6	4477.00	6009.00	-9999.
183000	172	0.96	-14.7	4303.00	5801.00	-9999.
184000	179	0.95	-15.7	4137.00	5597.00	-9999.
185000	167	0.94	-16.4	3975.00	5393.00	-9999.
186000	165	0.93	-17.4	3820.00	5201.00	-9999.
187000	160	0.90	-18.1	3671.00	5014.00	-9999.
188000	165	0.90	-19.2	3526.00	4816.00	-9999.
189000	175	0.92	-19.9	3381.00	4658.00	-9999.
190000	184	0.93	-20.8	3253.00	4521.00	-9999.
191000	179	0.93	-21.7	3124.00	4328.00	-9999.
192000	172	0.92	-22.5	3000.00	4170.00	-9999.
193000	170	0.92	-23.2	2860.00	4014.00	-9999.
194000	172	0.94	-24.3	2764.00	3870.00	-9999.
195000	166	0.95	-25.6	2651.00	3733.00	-9999.
196000	172	1.00	-26.9	2556.00	3601.00	-9999.
197000	166	1.04	-28.2	2492.00	3474.00	-9999.
198000	162	1.08	-29.6	2312.00	3350.00	-9999.
199000	165	1.11	-30.9	2246.00	3230.00	-9999.

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TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DEW POINT (DEG C)	
					(GRAM/M3)	(GRAM/M3)
202000	177	111	-13.6	2064+00	3002+00	-999.
201000	175	110	-14.7	1977+00	2889+00	-999.
202000	175	107	-16.3	1894+00	2786+00	-999.
203000	175	104	-18.7	1814+00	2686+00	-999.
204000	166	101	-18.8	1737+00	2583+00	-999.
205000	167	099	-19.8	1663+00	2483+00	-999.
206000	166	097	-19.8	1663+00	2483+00	-999.
207000	163	095	-40.8	1592+00	2387+00	-999.
208000	172	093	-41.8	1524+00	2294+00	-999.
209000	185	092	-42.6	1458+00	2203+00	-999.
210000	204	092	-43.4	1395+00	2115+00	-999.
211000	222	091	-44.3	1334+00	2031+00	-999.
212000	219	049	-45.6	1276+00	1942+00	-999.
213000	216	087	-45.9	1220+00	1870+00	-999.
214000	221	087	-47.5	1166+00	1800+00	-999.
215000	229	027	-48.7	1116+00	1731+00	-999.
216000	241	088	-49.3	1065+00	1658+00	-999.
217000	233	034	-50.3	1018+00	1591+00	-999.
218000	222	042	-51.5	9720+01	1528+00	-999.
219000	214	081	-53.0	9290+01	1470+00	-999.
220000	221	083	-54.9	8860+01	1414+00	-999.
221000	231	088	-56.1	8460+01	1358+00	-999.
222000	231	091	-58.2	8070+01	1308+00	-999.
223000	211	093	-62.5	7690+01	1272+00	-999.
224000	187	025	-66.0	7330+01	1232+00	-999.
225000	168	098	-69.0	7060+01	1205+00	-999.
226000	112	116	-71.2	6720+01	1159+00	-999.
227000	095	119	-69.3	6450+01	1102+00	-999.
228000	089	119	-69.2	6140+01	1049+00	-999.
229000	081	116	-67.2	5840+01	9877+01	-999.
230000	076	112	-69.9	5560+01	9531+01	-999.
231000	062	106	-71.2	5300+01	9140+01	-999.
232000	055	097	-73.3	5050+01	8802+01	-999.
233000	052	087	-76.3	4790+01	8477+01	-999.
234000	150	026	-78.2	4550+01	8129+01	-999.
235000	052	067	-80.4	4310+01	7791+01	-999.
236000	055	059	-81.5	4090+01	7434+01	-999.
237000	060	053	-80.8	3880+01	7026+01	-999.
238000	067	049	-78.2	3680+01	6524+01	-999.
239000	070	046	-78.6	3500+01	6266+01	-999.
240000	075	043	-77.4	3320+01	5908+01	-999.
241000	079	040	-75.9	3160+01	5580+01	-999.
242000	082	018	-75.2	3000+01	5278+01	-999.
243000	086	037	-74.2	2850+01	4989+01	-999.
244000	089	035	-74.2	2710+01	4784+01	-999.
245000	092	033	-74.8	2570+01	4513+01	-999.
246000	096	031	-73.3	2450+01	4270+01	-999.
247000	097	029	-72.2	2330+01	4038+01	-999.
248000	099	028	-71.2	2210+01	3812+01	-999.
249000	101	026	-69.7	2100+01	3595+01	-999.

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TABLE 5. (Continued)

ALITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
250000	104	024	-68.2	1910-01	1246-01	-999.
251000	106	022	-68.2	1910-01	1246-01	-999.
252000	105	021	-64.2	1820-01	1093-01	-999.
253000	111	019	-68.2	1730-01	940-01	-999.
254000	113	018	-68.2	1640-01	2187-01	-999.
255000	114	016	-68.2	1560-01	2651-01	-999.
256000	116	016	-68.2	1480-01	2532-01	-999.
257000	119	015	-68.2	1420-01	2413-01	-999.
258000	119	013	-67.2	1350-01	2283-01	-999.
259000	121	012	-67.9	1280-01	2172-01	-999.
260000	123	010	-69.4	1220-01	2066-01	-999.
261000	124	009	-70.2	1160-01	1991-01	-999.
262000	126	027	-70.2	1110-01	1905-01	-999.
263000	128	036	-71.0	1050-01	1809-01	-999.
264000	126	034	-72.5	1000-01	1736-01	-999.
265000	128	033	-73.2	9500-02	1655-01	-999.
266000	128	002	-73.5	9000-02	1571-01	-999.
267000	126	001	-75.1	8600-02	1512-01	-999.
268000	126	001	-76.6	8200-02	1453-01	-999.
269000	126	001	-78.2	7800-02	1393-01	-999.
270000	126	001	-79.6	7400-02	1332-01	-999.
271000	120	359	-80.3	7003-02	1261-01	-999.
272000	113	352	-81.0	6627-02	1193-01	-999.
273000	107	357	-81.6	6271-02	1129-01	-999.
274000	100	356	-82.3	5936-02	1068-01	-999.
275000	094	354	-83.0	5615-02	1011-01	-999.
276000	081	353	-83.7	5314-02	9566-02	-999.
277000	061	351	-84.3	5029-02	9052-02	-999.
278000	075	349	-85.0	4759-02	8566-02	-999.
279000	069	347	-85.7	4503-02	8106-02	-999.
280000	063	349	-86.3	4261-02	7671-02	-999.
281000	058	341	-87.0	4032-02	7259-02	-999.
282000	052	336	-87.7	3816-02	6869-02	-999.
283000	047	331	-88.3	3611-02	6500-02	-999.
284000	042	325	-89.0	3417-02	6151-02	-999.
285000	036	318	-89.7	3234-02	5821-02	-999.
286000	035	309	-90.1	3060-02	5509-02	-999.
289000	036	296	-91.1	2600-02	4950-02	-999.
292000	040	265	-91.9	2200-02	4220-02	-999.
295000	044	276	-92.6	1860-02	3590-02	-999.
298000	075	273	-91.5	1600-02	3050-02	-999.
301000	114	271	-90.1	1350-02	2560-02	-999.
304000	157	270	-88.6	1140-02	2140-02	-999.
307000	204	270	-87.2	9690-03	1600-02	-999.
310000	249	270	-85.6	8210-03	1510-02	-999.
313000	277	269	-84.0	6990-03	1270-02	-999.
316000	283	269	-81.6	5920-03	1070-02	-999.
319000	282	269	-79.5	5130-03	9040-03	-999.
322000	270	269	-77.3	4800-03	7630-03	-999.
325000	245	269	-75.1	3770-03	6440-03	-999.

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TABLE 5. (Concluded)

ALITUDE (FT.)	MIND SPEED (FT/SEC.)	IND. DIRECTION (DEG.)	TEMPERATURE (DEG. C.)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEA POINT (DEG C.)
32,000	2.01	26.9	-7.2-8	32.10-0.1	5.5440-0.1	-9999.
33,000	2.04	26.9	-6.9-0	27.90-0.3	4.6110-0.3	-9999.
33,4000	2.03	26.9	-6.5-2	26.90-0.3	3.9110-0.3	-9999.
33,7000	1.95	26.8	-6.1-4	20.90-0.3	3.3310-0.3	-9999.
34,0000	1.79	26.8	-5.7-6	18.10-0.3	2.8110-0.3	-9999.
34,3000	1.49	26.7	-5.3-8	15.70-0.3	2.3810-0.3	-9999.
34,6000	1.30	26.7	-4.8-6	13.70-0.3	2.0310-0.3	-9999.
34,9000	1.31	26.7	-4.2-1	12.10-0.3	1.7410-0.3	-9999.
35,2000	1.28	26.5	-3.5-6	10.70-0.3	1.4910-0.3	-9999.
35,5000	1.20	26.4	-2.9-1	9.460-0.4	1.2810-0.3	-9999.
35,8000	1.06	26.1	-2.2-6	8.150-0.4	1.0910-0.3	-9999.
36,1000	0.84	26.2	-1.6-0	7.370-0.4	9.3710-0.4	-9999.
36,4000	0.86	26.0	-6.2	6.680-0.4	8.1610-0.4	-9999.
36,7000	0.86	25.7	3.5	6.050-0.4	7.1110-0.4	-9999.
37,0000	0.84	25.1	13.2	5.470-0.4	6.1910-0.4	-9999.
37,3000	0.81	24.7	23.0	4.9440-0.4	5.3910-0.4	-9999.
37,6000	0.77	23.9	12.7	4.6450-0.4	4.6690-0.4	-9999.
37,9000	0.64	24.8	43.1	4.050-0.4	4.1110-0.4	-9999.
38,2000	0.63	24.5	54.2	3.720-0.4	3.6310-0.4	-9999.
38,5000	0.62	24.1	65.7	3.420-0.4	3.3220-0.4	-9999.
38,8000	0.62	23.8	77.4	3.160-0.4	2.8610-0.4	-9999.
39,1000	0.62	23.4	89.4	2.920-0.4	2.5610-0.4	-9999.
39,4000	0.62	23.2	101.6	2.710-0.4	2.2910-0.4	-9999.
39,7000	0.63	22.6	114.1	2.520-0.4	2.0510-0.4	-9999.
40,0000	0.64	22.2	126.6	2.350-0.4	1.4510-0.4	-9999.

TABLE 6. STS-4 SRB DESCENT-IMPACT SURFACE SHIP OBSERVATIONS

Site: USN Ship, Gen. H. S. Vandenberg									
Location: 29°N Latitude 78°W Longitude									
Date: June 27, 1982									
Time: 1507 GMT									
Surface Observation:									
Air Temp. °F	Wet-Bulb °F	Dew Pt. °F	Pressure (MSL) mb	Wind Dir.	Wind Sp.	Kt.			
86.5	78.8	76	1020.7 (60' station press. = 1018.9 mb)	210°	2				
Sky Observation:									
Clouds	Total Sky Cover	Opaque Sky	Visibility (miles)						
2/10 Cumulus at 1,500 ft 2/10 Thin Cirrus at 30,000 ft	4/10	2/10	7	(Dense Haze Aloft)					
Sea Observation:									
Sea Condition	Wind Waves	Swell Conditions							
Sea Calm - Code 1	Freq.	Ht.							
0/10 Breaking Waves	Sec.	m.	Data Not Available						
0/10 Foam	5	½							
Surface Sea Water Temp = 28.9°C (84.0°F)									

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TABLE 7. SELECTED ATMOSPHERIC OBSERVATIONS FOR THE FLIGHT TESTS OF THE SPACE SHUTTLE VEHICLES

Seq. No.	Vehicle No.	Vehicle Data		Surface Observations				Inflight Conditions Max. Wind Below 60,000 ft				Count Down and Launch Comments of Meteorological Significance
		Launch Date	Time ^c (EST) Nearest Minute	Launch Pad	Press ^d N/cm ²	Temp. (°C)	Rel. Hum. (%)	Speed (ft/sec)	Dir. (deg)	Alt. (ft)	Speed (ft/sec)	
1	STS-1	4/12/81	0700	39A	10.214 ^e	21	82	11.8 15.2	125 120	44,300	98	250
2	STS-2	11/12/81	1010	39A	10.166	23	61	27.0 27.0	345 355	36,300	158	286
3	STS-3	3/22/82	1100	39A	10.160	24	71	7.0 ^f 8.0 ^f	50 ^f 145 ^f	45,006	11 ^g	250
4	STS-4	6/27/82	1100 ^h	39A	10.200	29	70	5.5 ⁱ 4.9 ⁱ	133 ⁱ 141 ⁱ	47,900	37	329

a. Pad 39A thermodynamic measurements taken at approximately 1.2 m (4 ft) above natural grade at camera site No. 3.

b. 1 min average prior to L+0 of 60 ft PLP (listed first) and 275 ft FSS winds measured above natural grade.

c. Eastern Standard Time unless otherwise noted.

d. Pressure measurement applicable to 21 ft above MSL unless otherwise indicated.

e. Pressure measurement applicable to 14 ft above MSL.

f. 10 sec average prior to L+0.

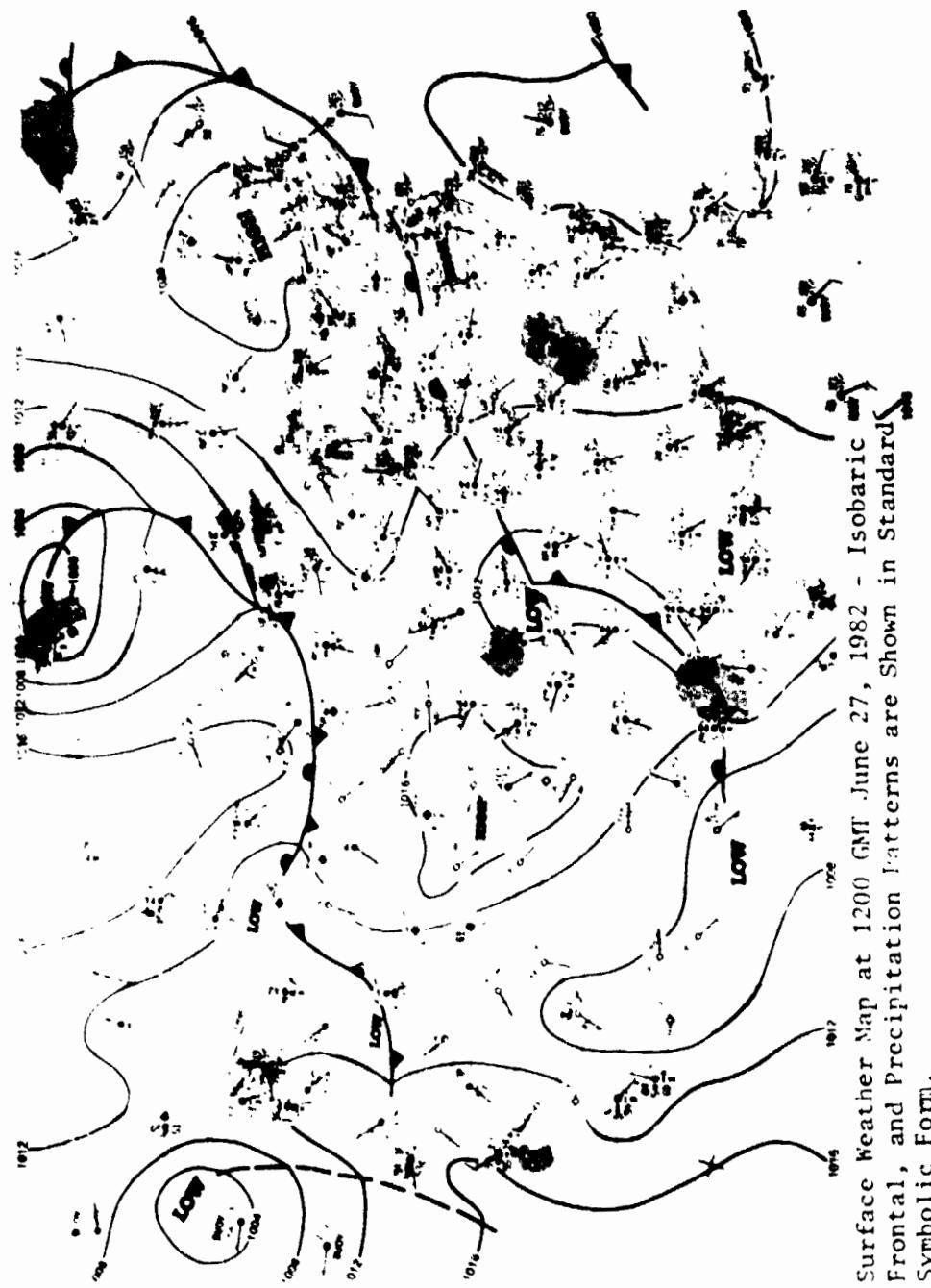
g. Due to onset of sea breeze.

h. Eastern Daylight Time

i. 30 sec average prior to L+0.

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Surface Weather Map at 1200 GMT June 27, 1982 - Isobaric Frontal, and Precipitation Patterns are Shown in Standard Symbolic Form.

Figure 1. Surface weather map 3 hr prior to launch of STS-4.

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500 Millibar Height
Contours at 1200 GMT
June 27, 1982.

Continuous Lines Indicate Height Contours In
Feet Above Sea Level. Dashed Lines are Isotherms
In Degrees Centigrade. Arrows Show Wind Direction
and Speed at the 500 MB Level.

Figure 2. 500 mb map 3 hr prior to launch of STS-4.

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Figure 3. GOES SMS-II visible imagery of cloud cover 30 min after launch of STS-4 (1530 GMT, June 27, 1982). 500-mb contours and wind barbs are also included for 1200Z.

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FIGURE 4. Enlarged view of OKEAN MS 11 visible imagery of cloud cover with exhaust trail visible (indicated by arrow) 3 min. after launch of STS 4 (1503 GMT, June 27, 1992). Surface temperatures and wind bands for 1500 GMT are also included.

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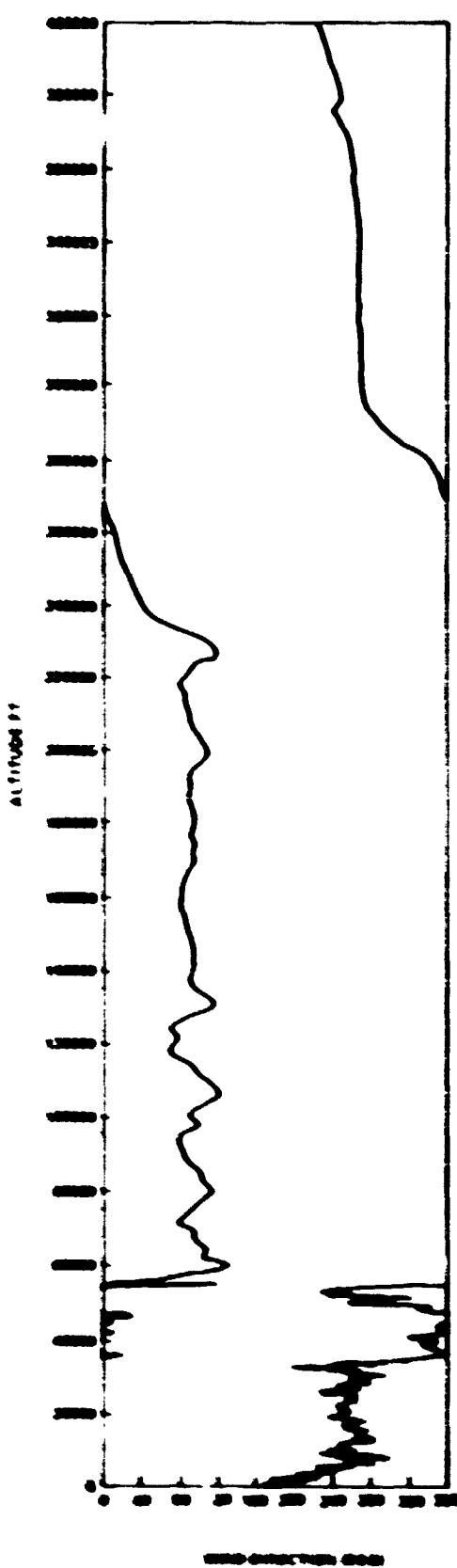
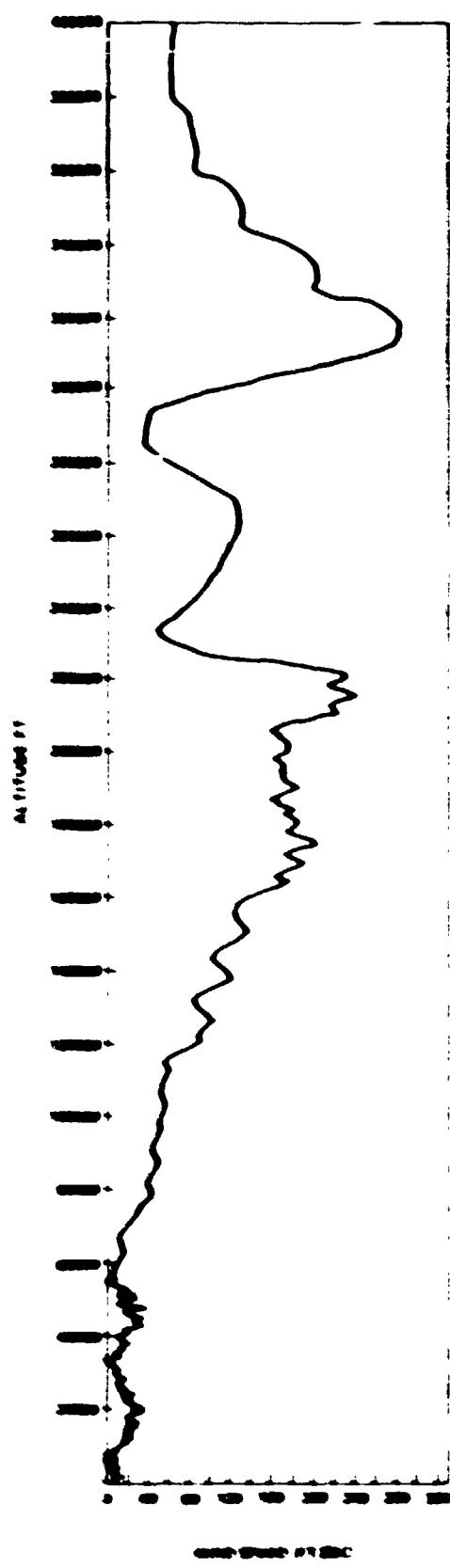


Figure 5. Scalar wind speed and direction at launch time of STS 4.

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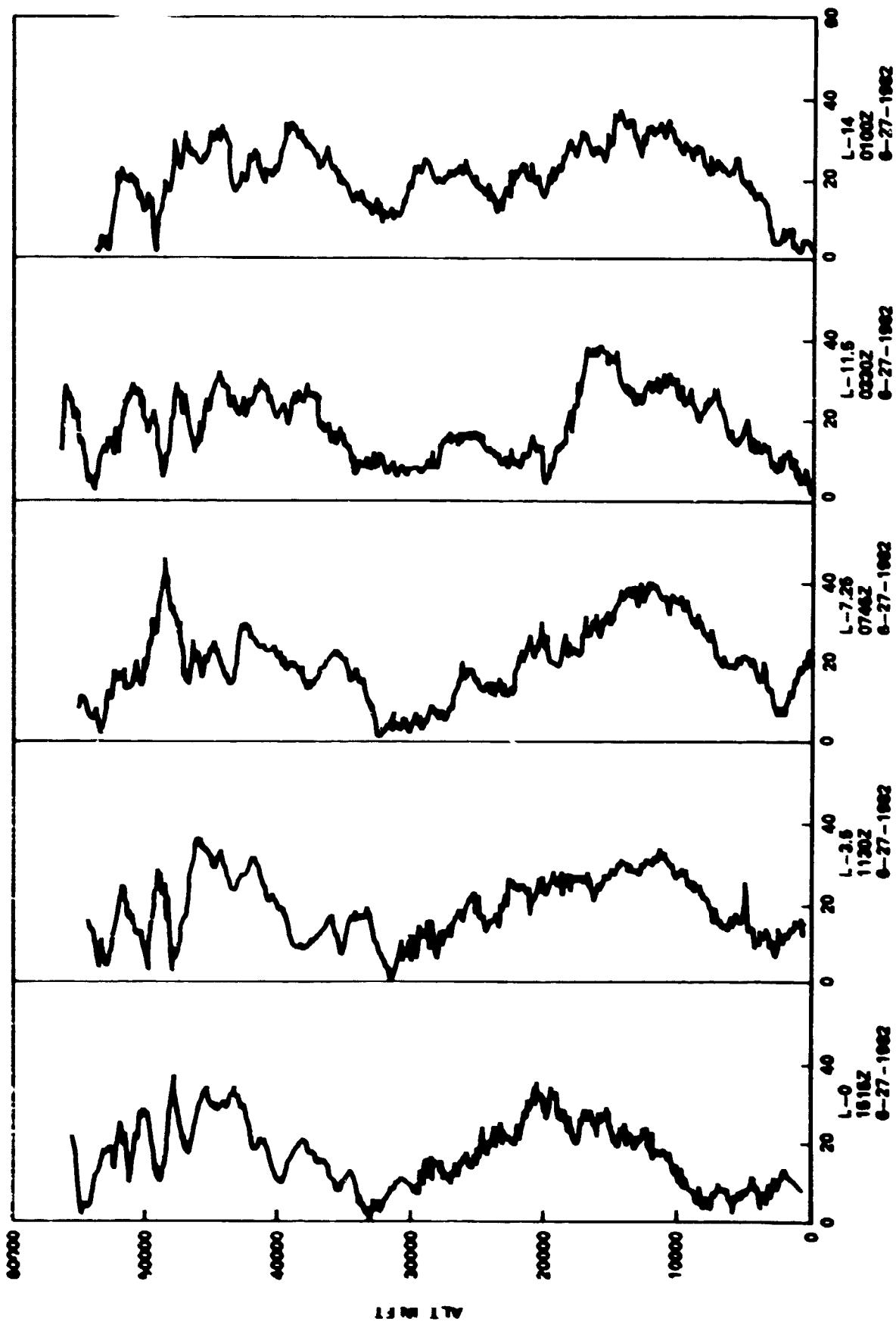
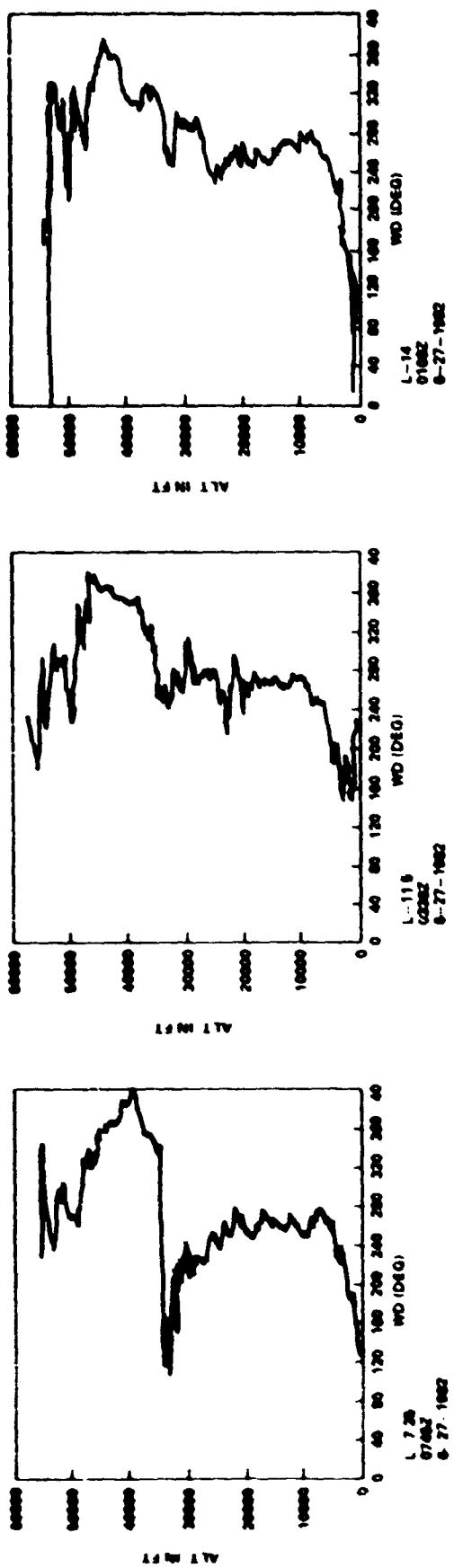


Figure 6. STS-4 prelaunch/launch Jimosphere-measured wind speeds (FPS).



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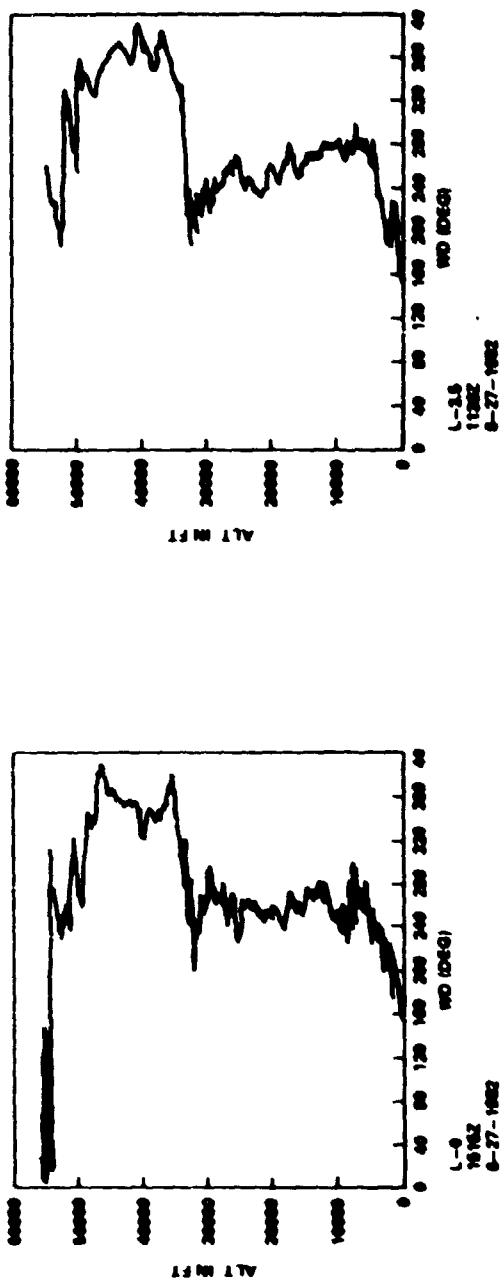


Figure 7. STS-4 prelaunch/launch Jimosphere-measured wind directions (degrees).

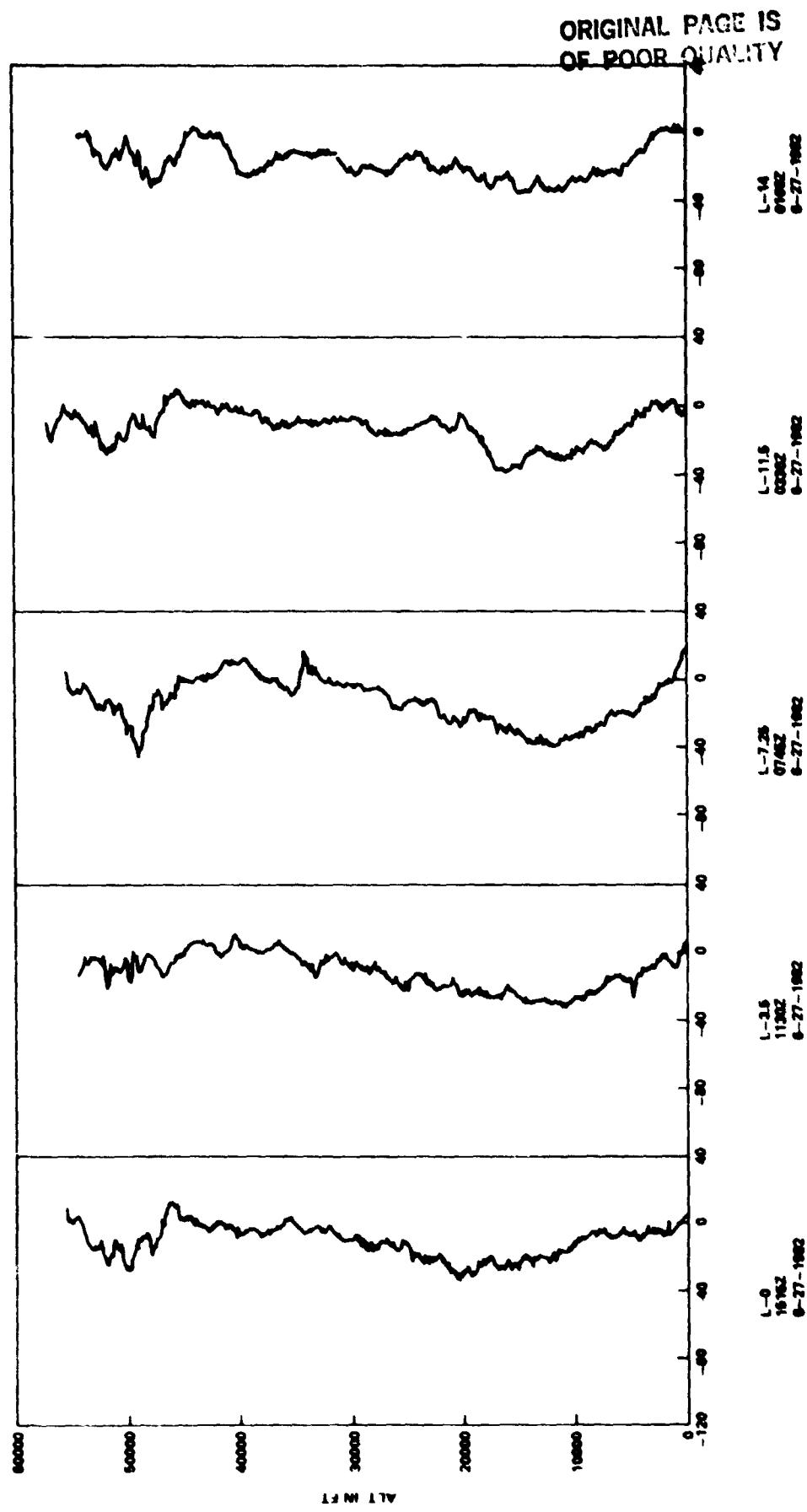


Figure 8. STS-4 prelaunch/launch Jimosphere-measured in-plane component winds (FPS). Flight azimuth = 90 degrees.

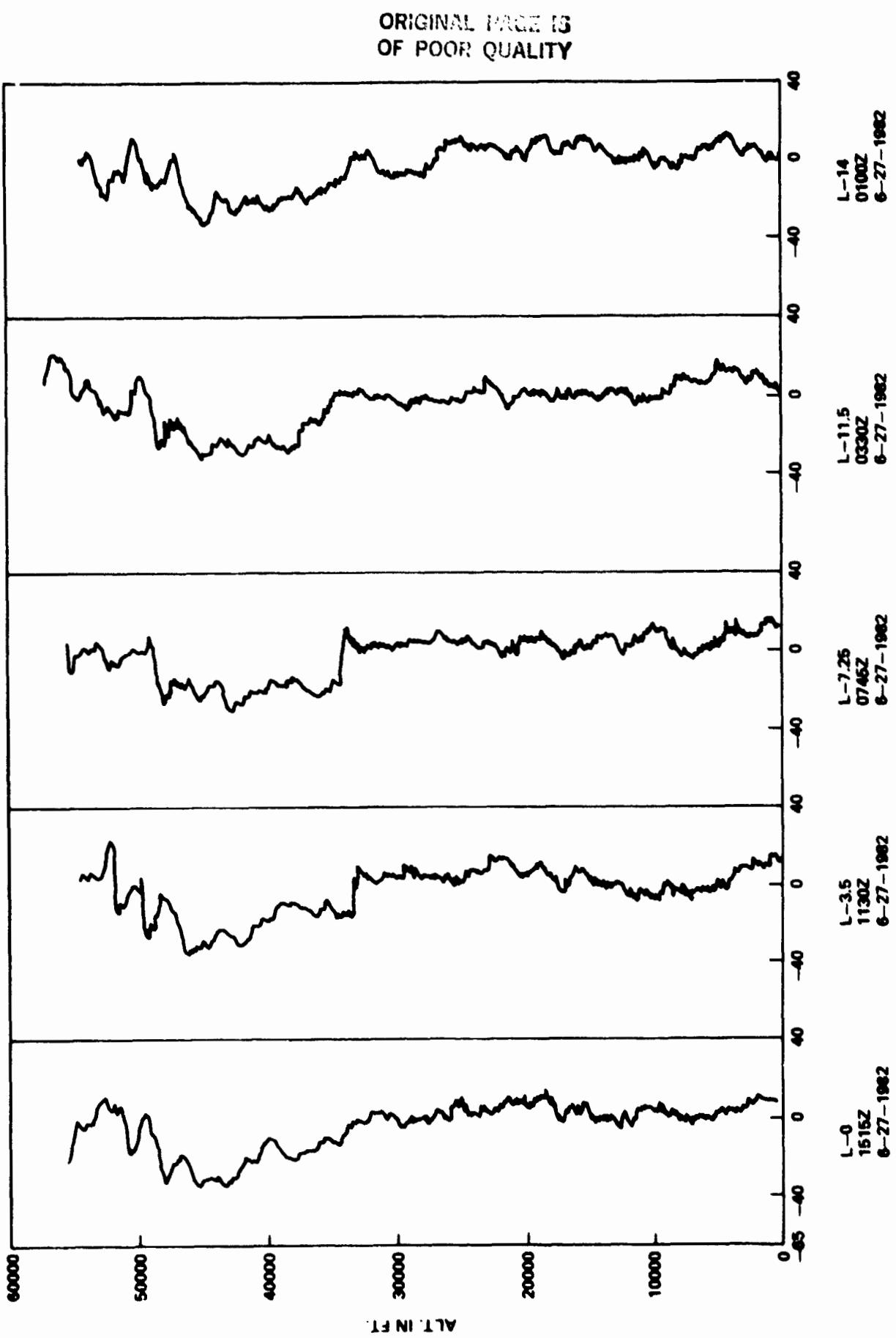
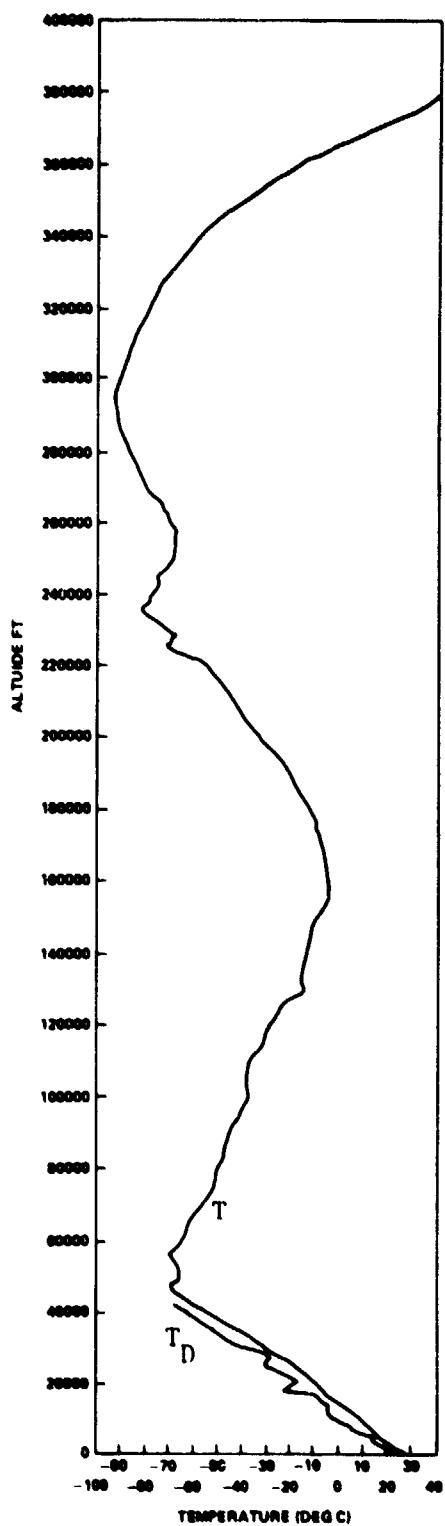
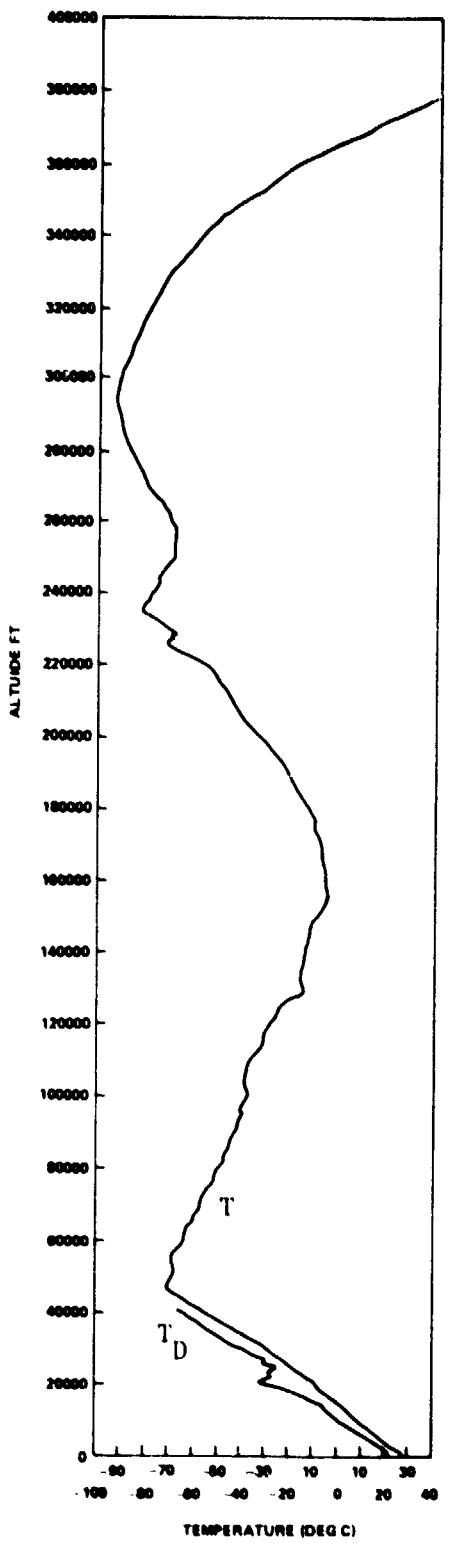


Figure 9. STS-4 prelaunch/launch Jimsphere-measured out-of-plane component winds (FPS). Flight azimuth= 90 degrees.

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T_D Dew point temperature
T Temperature

Figure 10. STS-4 temperature profiles versus altitude for launch (left) and SRB descent (right).

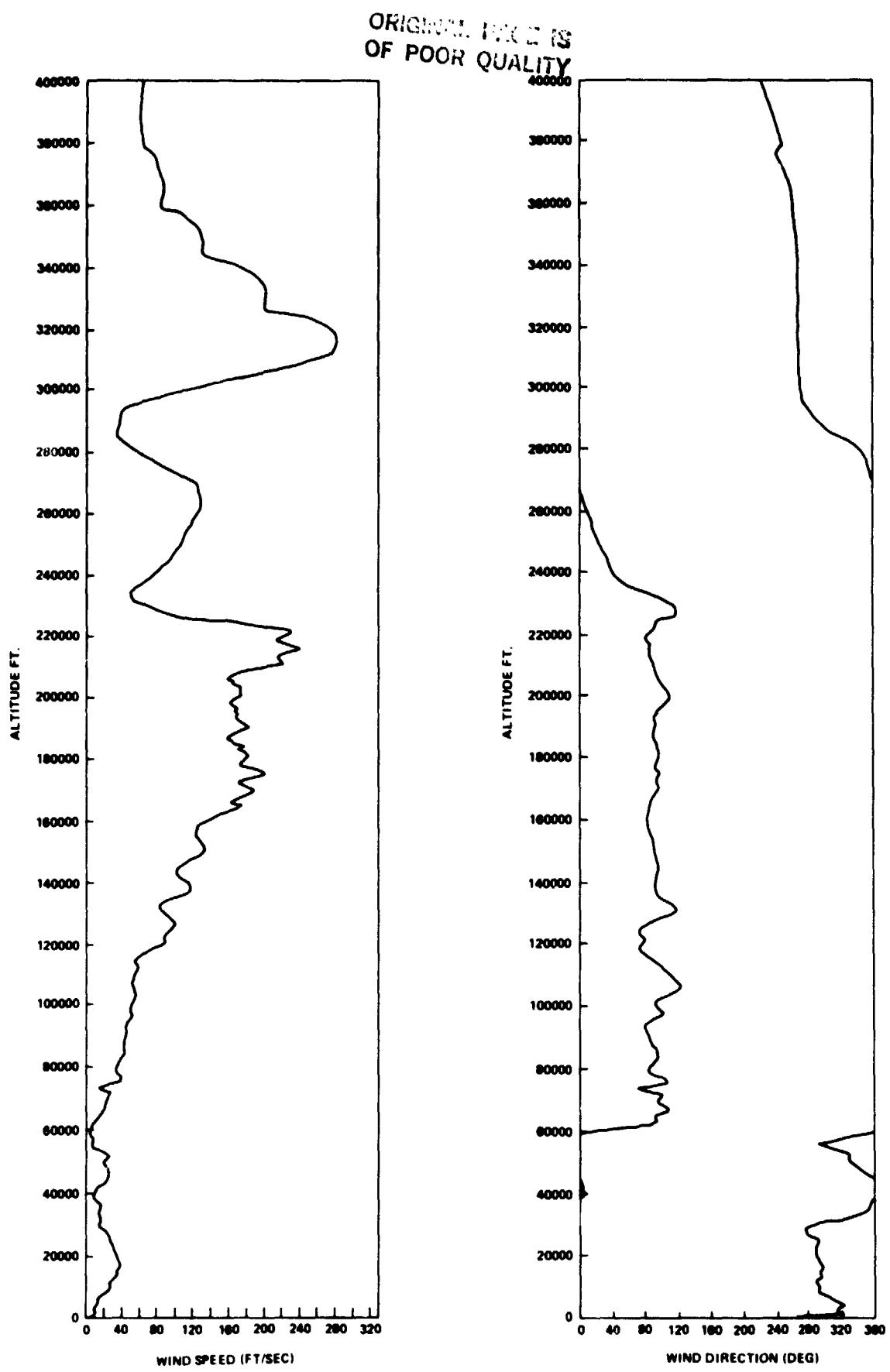


Figure 11. STS 4 scalar wind speed and direction for SRB descent.

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